



SEQUENCE LISTING

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<120> NOVEL GENES ENCODING PROTEIN KINASE/PROTEIN PHOSPHATASE

<130> 06501-099002

<140> US 10/060,065

<141> 2002-01-29

<150> PCT/JP00/05061

<151> 2000-07-28

<150> US 60/159,590

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<150> US 60/183,322

<151> 2000-02-17

<150> JP 11-248036

<151> 1999-07-29

<150> JP 2000-118776

<151> 2000-01-11

<150> JP 2000-183767

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<170> PatentIn Ver. 2.0

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gtt gat gag cca acc ctt tcc tgg tca cgt cca tcc act aga gcc agt 506
Val Asp Glu Pro Thr Leu Ser Trp Ser Arg Pro Ser Thr Arg Ala Ser
        35             40             45

gaa gta cta tgt tcc acc aac gtt tct cac tat gag ctc caa gta gaa 554
Glu Val Leu Cys Ser Thr Asn Val Ser His Tyr Glu Leu Gln Val Glu
        50             55             60

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Ile Gly Arg Gly Phe Asp Asn Leu Thr Ser Val His Leu Ala Arg His
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act ccc aca gga aca ctg gta act ata aaa att aca aat ctg gaa aac 650
Thr Pro Thr Gly Thr Leu Val Thr Ile Lys Ile Thr Asn Leu Glu Asn
        80             85             90             95

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Cys Asn Glu Glu Arg Leu Lys Ala Leu Gln Lys Ala Val Ile Leu Ser
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cac ttt ttc cgg cat ccc aat att aca act tat tgg aca gtt ttc act 746
His Phe Phe Arg His Pro Asn Ile Thr Thr Tyr Trp Thr Val Phe Thr
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gtt ggc agc tgg ctt tgg gtt att tct cca ttt atg gcc tat ggt tca 794
Val Gly Ser Trp Leu Trp Val Ile Ser Pro Phe Met Ala Tyr Gly Ser
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gca agt caa ctc ttg agg acc tat ttt cct gaa gga atg agt gaa act 842
Ala Ser Gln Leu Leu Arg Thr Tyr Phe Pro Glu Gly Met Ser Glu Thr
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Leu Ile Arg Asn Ile Leu Phe Gly Ala Val Arg Gly Leu Asn Tyr Leu
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His Gln Asn Gly Cys Ile His Arg Ser Ile Lys Ala Ser His Ile Leu
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att tct ggt gat ggc cta gtg acc ctc tct ggc ctg tcc cat ctg cat 986

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| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-------|-----|-----|------|--------|------|--------|------|------|-----|-----|-----|-----|------|
| Ile | Ser | Gly | Asp | Gly | Leu | Val | Thr | Leu | Ser | Gly | Leu | Ser | His | Leu | His | |
| | | | 195 | | | | 200 | | | | | | 205 | | | |
| agt | ttg | gtt | aag | cat | gga | cag | agg | cat | agg | gct | gtg | tat | gat | ttc | cca | 1034 |
| Ser | Leu | Val | Lys | His | Gly | Gln | Arg | His | Arg | Ala | Val | Tyr | Asp | Phe | Pro | |
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| Gln | Phe | Ser | Thr | Ser | Val | Gln | Pro | Trp | Leu | Ser | Pro | Glu | Leu | Leu | Arg | |
| | | | 225 | | | | 230 | | | | | | 235 | | | |
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| Gln | Asp | Leu | His | Gly | Tyr | Asn | Val | Lys | Ser | Asp | Ile | Tyr | Ser | Val | Gly | |
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| Ile | Thr | Ala | Cys | Glu | Leu | Ala | Ser | Gly | Gln | Val | Pro | Phe | Gln | Asp | Met | |
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| His | Arg | Thr | Gln | Met | Leu | Leu | Gln | Lys | Leu | Lys | Gly | Pro | Pro | Tyr | Ser | |
| | | | 275 | | | | 280 | | | | | | 285 | | | |
| cca | ttg | gat | atc | agt | att | ttc | cct | caa | tca | gaa | tcc | aga | atg | aaa | aat | 1274 |
| Pro | Leu | Asp | Ile | Ser | Ile | Phe | Pro | Gln | Ser | Glu | Ser | Arg | Met | Lys | Asn | |
| | | | 290 | | | | 295 | | | | | | 300 | | | |
| tcc | cag | tca | ggg | gta | gac | tct | ggg | att | gga | gaa | agt | gtg | ctt | gtc | tcc | 1322 |
| Ser | Gln | Ser | Gly | Val | Asp | Ser | Gly | Ile | Gly | Glu | Ser | Val | Leu | Val | Ser | |
| | | | 305 | | | | 310 | | | | | | 315 | | | |
| agt | gga | act | cac | aca | gta | aat | agt | gac | cga | tta | cac | aca | cca | tcc | tca | 1370 |
| Ser | Gly | Thr | His | Thr | Val | Asn | Ser | Asp | Arg | Leu | His | Thr | Pro | Ser | Ser | |
| | | | 320 | | | | 325 | | | | | | 330 | | | |
| aaa | act | ttc | tct | cct | gcc | ttc | ttt | agc | ttg | gta | cag | ctc | tgt | ttg | caa | 1418 |
| Lys | Thr | Phe | Ser | Pro | Ala | Phe | Phe | Ser | Leu | Val | Gln | Leu | Cys | Leu | Gln | |
| | | | 340 | | | | 345 | | | | | | 350 | | | |
| caa | gat | cct | gag | aaa | agg | cca | tca | gca | agc | agt | tta | ttg | tcc | cat | gtt | 1466 |
| Gln | Asp | Pro | Glu | Lys | Arg | Pro | Ser | Ala | Ser | Ser | Leu | Leu | Ser | His | Val | |
| | | | 355 | | | | 360 | | | | | | 365 | | | |
| ttc | ttc | aaa | cag | atg | aaa | gaa | gaa | agc | cag | gat | tca | ata | ctt | tca | ctg | 1514 |
| Phe | Phe | Lys | Gln | Met | Lys | Glu | Glu | Ser | Gln | Asp | Ser | Ile | Leu | Ser | Leu | |
| | | | 370 | | | | 375 | | | | | | 380 | | | |
| ttg | cct | cct | gct | tat | aac | aag | cca | tca | ata | tca | ttg | cct | cca | gtg | tta | 1562 |
| Leu | Pro | Pro | Ala | Tyr | Asn | Lys | Pro | Ser | Ile | Ser | Leu | Pro | Pro | Val | Leu | |
| | | | 385 | | | | 390 | | | | | | 395 | | | |
| cct | tg | act | gag | cca | gaa | tgt | gat | ttt | cct | gat | gaa | aaa | gac | tca | tac | 1610 |
| Pro | Trp | Thr | Glu | Pro | Glu | Cys | Asp | Phe | Pro | Asp | Glu | Lys | Asp | Ser | Tyr | |
| | | | 400 | | | | 405 | | | | | | 410 | | | |
| tg | gaa | ttc | taggg | ctg | gcc | aaat | catttt | atgt | cctata | tact | tgac | ac | | | | 1659 |
| Trp | Glu | Phe | | | | | | | | | | | | | | |

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Val Leu Cys Ser Thr Asn Val Ser His Tyr Glu Leu Gln Val Glu Ile
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Gly Arg Gly Phe Asp Asn Leu Thr Ser Val His Leu Ala Arg His Thr
      65          70          75          80
Pro Thr Gly Thr Leu Val Thr Ile Lys Ile Thr Asn Leu Glu Asn Cys
      85          90          95
Asn Glu Glu Arg Leu Lys Ala Leu Gln Lys Ala Val Ile Leu Ser His
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Phe Phe Arg His Pro Asn Ile Thr Thr Tyr Trp Thr Val Phe Thr Val
      115         120         125
Gly Ser Trp Leu Trp Val Ile Ser Pro Phe Met Ala Tyr Gly Ser Ala
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Ser Gln Leu Leu Arg Thr Tyr Phe Pro Glu Gly Met Ser Glu Thr Leu
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Ile Arg Asn Ile Leu Phe Gly Ala Val Arg Gly Leu Asn Tyr Leu His
      165         170         175
Gln Asn Gly Cys Ile His Arg Ser Ile Lys Ala Ser His Ile Leu Ile
      180         185         190
Ser Gly Asp Gly Leu Val Thr Leu Ser Gly Leu Ser His Leu His Ser
      195         200         205
Leu Val Lys His Gly Gln Arg His Arg Ala Val Tyr Asp Phe Pro Gln
      210         215         220
Phe Ser Thr Ser Val Gln Pro Trp Leu Ser Pro Glu Leu Leu Arg Gln
      225         230         235         240
Asp Leu His Gly Tyr Asn Val Lys Ser Asp Ile Tyr Ser Val Gly Ile
      245         250         255
Thr Ala Cys Glu Leu Ala Ser Gly Gln Val Pro Phe Gln Asp Met His
      260         265         270
Arg Thr Gln Met Leu Leu Gln Lys Leu Lys Gly Pro Pro Tyr Ser Pro
      275         280         285
Leu Asp Ile Ser Ile Phe Pro Gln Ser Glu Ser Arg Met Lys Asn Ser
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Gln Ser Gly Val Asp Ser Gly Ile Gly Glu Ser Val Leu Val Ser Ser
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| | | | | Met | Pro | Leu | His | Val | Arg | Arg | | | | | | |
| | | | | 1 | | | | 5 | | | | | | | | |
| agt | agt | gac | cca | gct | cta | att | ggc | ctc | tcc | act | tct | gtc | agt | gat | agt | 101 |
| Ser | Ser | Asp | Pro | Ala | Leu | Ile | Gly | Leu | Ser | Thr | Ser | Val | Ser | Asp | Ser | |
| | | 10 | | | | | 15 | | | | | 20 | | | | |
| aat | ttt | tcc | tct | gaa | gag | cct | tca | agg | aaa | aat | ccc | aca | cgc | tgg | tca | 149 |
| Asn | Phe | Ser | Ser | Glu | Glu | Pro | Ser | Arg | Lys | Asn | Pro | Thr | Arg | Trp | Ser | |
| | 25 | | | | | 30 | | | | | 35 | | | | | |
| aca | aca | gct | ggc | ttc | ctc | aag | cag | aac | act | gct | ggg | agt | cct | aaa | gcc | 197 |
| Thr | Thr | Ala | Gly | Phe | Leu | Lys | Gln | Asn | Thr | Ala | Gly | Ser | Pro | Lys | Ala | |
| | 40 | | | | 45 | | | | | 50 | | | | | 55 | |
| tgc | gac | agg | aag | aaa | gat | gaa | aac | tac | aga | agc | ctc | ccg | cgg | gat | act | 245 |
| Cys | Asp | Arg | Lys | Lys | Asp | Glu | Asn | Tyr | Arg | Ser | Leu | Pro | Arg | Asp | Thr | |
| | | | | 60 | | | | | 65 | | | | | 70 | | |
| agt | aac | tgg | tct | aac | caa | ttt | cag | aga | gac | aat | gct | cgc | tcg | tct | ctg | 293 |
| Ser | Asn | Trp | Ser | Asn | Gln | Phe | Gln | Arg | Asp | Asn | Ala | Arg | Ser | Ser | Leu | |
| | | | 75 | | | | 80 | | | | | | 85 | | | |
| agt | gcc | agt | cac | cca | atg | gtg | ggc | aag | tgg | cag | gag | aaa | caa | gaa | cag | 341 |
| Ser | Ala | Ser | His | Pro | Met | Val | Gly | Lys | Trp | Gln | Glu | Lys | Gln | Glu | Gln | |
| | | 90 | | | | | 95 | | | | | 100 | | | | |
| gat | gag | gat | ggg | aca | gaa | gag | gat | aac | agt | cgt | gtt | gaa | cct | gtt | gga | 389 |
| Asp | Glu | Asp | Gly | Thr | Glu | Glu | Asp | Asn | Ser | Arg | Val | Glu | Pro | Val | Gly | |
| | 105 | | | | | 110 | | | | | 115 | | | | | |

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| His Ala Asp Thr Gly Leu Glu His Ile Pro Asn Phe Ser Leu Asp Asp | |
| 120 125 130 135 | |
| atg gta aag ctc gta gaa gtc ccc aac gat gga ggg cct ctg gga atc | 485 |
| Met Val Lys Leu Val Glu Val Pro Asn Asp Gly Gly Pro Leu Gly Ile | |
| 140 145 150 | |
| cat gta gtg cct ttc agt gct cga ggc ggc aga acc ctg ggg tta tta | 533 |
| His Val Val Pro Phe Ser Ala Arg Gly Gly Arg Thr Leu Gly Leu Leu | |
| 155 160 165 | |
| gta aaa cga ttg gag aaa ggt ggt aaa gct gaa cat gaa aat ctt ttt | 581 |
| Val Lys Arg Leu Glu Lys Gly Gly Lys Ala Glu His Glu Asn Leu Phe | |
| 170 175 180 | |
| cgt gag aat gat tgc att gtc agg att aat gat ggc gac ctt cga aat | 629 |
| Arg Glu Asn Asp Cys Ile Val Arg Ile Asn Asp Gly Asp Leu Arg Asn | |
| 185 190 195 | |
| aga aga ttt gaa caa gca caa cat atg ttt cgc caa gcc atg cgt aca | 677 |
| Arg Arg Phe Glu Gln Ala Gln His Met Phe Arg Gln Ala Met Arg Thr | |
| 200 205 210 215 | |
| ccc atc att tgg ttc cat gtg gtt cct gca gca aat aaa gag cag tat | 725 |
| Pro Ile Ile Trp Phe His Val Val Pro Ala Ala Asn Lys Glu Gln Tyr | |
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| Glu Gln Leu Ser Gln Ser Glu Lys Asn Asn Tyr Tyr Ser Ser Arg Phe | |
| 235 240 245 | |
| agc cct gac agc cag tat att gac aac agg agt gtg aac agt gca ggg | 821 |
| Ser Pro Asp Ser Gln Tyr Ile Asp Asn Arg Ser Val Asn Ser Ala Gly | |
| 250 255 260 | |
| ctt cac acg gtg cag aga gca ccc cga ctg aac cac ccg cct gag cag | 869 |
| Leu His Thr Val Gln Arg Ala Pro Arg Leu Asn His Pro Pro Glu Gln | |
| 265 270 275 | |
| ata gac tct cac tca aga cta cct cat agc gca cac ccc tcg gga aaa | 917 |
| Ile Asp Ser His Ser Arg Leu Pro His Ser Ala His Pro Ser Gly Lys | |
| 280 285 290 295 | |
| cca cca tcc gct cca gcc tcg gca cct cag aat gta ttt agt acg act | 965 |
| Pro Pro Ser Ala Pro Ala Ser Ala Pro Gln Asn Val Phe Ser Thr Thr | |
| 300 305 310 | |
| gta agc agt ggt tat aac acc aaa aaa ata ggc aag agg ctt aat atc | 1013 |
| Val Ser Ser Gly Tyr Asn Thr Lys Lys Ile Gly Lys Arg Leu Asn Ile | |
| 315 320 325 | |
| cag ctt aag aaa ggt aca gaa ggt ttg gga ttc agc atc act tcc aga | 1061 |
| Gln Leu Lys Lys Gly Thr Glu Gly Leu Gly Phe Ser Ile Thr Ser Arg | |
| 330 335 340 | |
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| | |
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| ccc cgg ggg gcg gcc att cag gat ggc cga ctt aag gca gga gac aga | 1157 |
| Pro Arg Gly Ala Ala Ile Gln Asp Gly Arg Leu Lys Ala Gly Asp Arg | |
| 360 365 370 375 | |
| ctt ata gag gta aat gga gta gat tta gtg ggc aaa tcc caa gag gaa | 1205 |
| Leu Ile Glu Val Asn Gly Val Asp Leu Val Gly Lys Ser Gln Glu Glu | |
| 380 385 390 | |
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| Val Val Ser Leu Leu Arg Ser Thr Lys Met Glu Gly Thr Val Ser Leu | |
| 395 400 405 | |
| ctg gtc ttt cgc cag gaa gac gcc ttc cac cca agg gaa ctg aat gca | 1301 |
| Leu Val Phe Arg Gln Glu Asp Ala Phe His Pro Arg Glu Leu Asn Ala | |
| 410 415 420 | |
| gag cca agc cag atg cag att cca aaa gaa acg aaa gca gaa gat gag | 1349 |
| Glu Pro Ser Gln Met Gln Ile Pro Lys Glu Thr Lys Ala Glu Asp Glu | |
| 425 430 435 | |
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| Asp Ile Val Leu Thr Pro Asp Gly Thr Arg Glu Phe Leu Thr Phe Glu | |
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| Val Pro Leu Ser Asp Ser Gly Ser Ala Gly Leu Gly Val Ser Val Lys | |
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| Gly Asn Arg Ser Lys Glu Asn His Ala Asp Leu Gly Ile Phe Val Lys | |
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| Ser Ile Ile Asn Gly Gly Ala Ala Ser Lys Asp Gly Arg Leu Arg Val | |
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| Asn Asp Gln Leu Ile Ala Val Asn Gly Glu Ser Leu Leu Gly Lys Thr | |
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| Asn Gln Asp Ala Met Glu Thr Leu Arg Arg Ser Met Ser Thr Glu Gly | |
| 520 525 530 535 | |
| aat aaa cga gga atg atc cag ctt att gtt gca agg aga ata agc aag | 1685 |
| Asn Lys Arg Gly Met Ile Gln Leu Ile Val Ala Arg Arg Ile Ser Lys | |
| 540 545 550 | |
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| Cys Asn Glu Leu Lys Ser Pro Gly Ser Pro Pro Gly Pro Glu Leu Pro | |
| 555 560 565 | |
| att gaa aca gcg ttg gat gat aga gaa cga aga att tcc cat tcc ctc | 1781 |
| Ile Glu Thr Ala Leu Asp Asp Arg Glu Arg Arg Ile Ser His Ser Leu | |

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| ccc caa gat gac act gtc att ata gaa gat gac agg ttg cca gtg ctt Pro Gln Asp Asp Thr Val Ile Ile Glu Asp Asp Arg Leu Pro Val Leu 620 625 630 | | | 1925 |
| cct cca cat ctc tct gac cag tcc tct tcc agc tcc cat gat gat gtg Pro Pro His Leu Ser Asp Gln Ser Ser Ser Ser Ser His Asp Asp Val 635 640 645 | | | 1973 |
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| gat tca gcc gac tgc tct ttg agt cca gat gtt gat cca gtt ctt gct Asp Ser Ala Asp Cys Ser Leu Ser Pro Asp Val Asp Pro Val Leu Ala 665 670 675 | | | 2069 |
| ttt caa cga gaa gga ttt gga cgt cag act gac gag act aaa ctc aat Phe Gln Arg Glu Gly Phe Gly Arg Gln Thr Asp Glu Thr Lys Leu Asn 680 685 690 695 | | | 2117 |
| aca gtg gat gac cag aaa gca ggt tct ccc agc aga gat gtg ggt cct Thr Val Asp Asp Gln Lys Ala Gly Ser Pro Ser Arg Asp Val Gly Pro 700 705 710 | | | 2165 |
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| atc gac aaa tct tat gat aaa ccc gcg gta gat gat gat gat gaa ggc Ile Asp Lys Ser Tyr Asp Lys Pro Ala Val Asp Asp Asp Asp Glu Gly 760 765 770 775 | | | 2357 |
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 Gln Met Asn Gly Asn Gln Glu Lys Gly Asp Lys Thr Asp Arg Lys Lys
 810 815 820

 gat aaa act gga aaa gaa aag aag aaa gat aga gat aag gag aag gat 2549
 Asp Lys Thr Gly Lys Glu Lys Lys Lys Asp Arg Asp Lys Glu Lys Asp
 825 830 835

 aaa atg aaa gcc aag aag gga atg ctg aag ggc ttg gga gac atg ttc 2597
 Lys Met Lys Ala Lys Lys Gly Met Leu Lys Gly Leu Gly Asp Met Phe
 840 845 850 855

 agc ctt gcc aaa ctg aag ccc gag aag aga tgaacaacaa agcgattcaa 2647
 Ser Leu Ala Lys Leu Lys Pro Glu Lys Arg
 860 865

 aacatgtctt gaacagcaca tattgcacag ttgttggttt ttttaaacaa acaataaatt 2707
 tacttttaat g 2718

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 <212> PRT
 <213> Homo sapiens

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 Lys Asn Pro Thr Arg Trp Ser Thr Thr Ala Gly Phe Leu Lys Gln Asn
 35 40 45
 Thr Ala Gly Ser Pro Lys Ala Cys Asp Arg Lys Lys Asp Glu Asn Tyr
 50 55 60
 Arg Ser Leu Pro Arg Asp Thr Ser Asn Trp Ser Asn Gln Phe Gln Arg
 65 70 75 80
 Asp Asn Ala Arg Ser Ser Leu Ser Ala Ser His Pro Met Val Gly Lys
 85 90 95
 Trp Gln Glu Lys Gln Glu Gln Asp Glu Asp Gly Thr Glu Glu Asp Asn
 100 105 110
 Ser Arg Val Glu Pro Val Gly His Ala Asp Thr Gly Leu Glu His Ile
 115 120 125
 Pro Asn Phe Ser Leu Asp Asp Met Val Lys Leu Val Glu Val Pro Asn
 130 135 140
 Asp Gly Gly Pro Leu Gly Ile His Val Val Pro Phe Ser Ala Arg Gly
 145 150 155 160
 Gly Arg Thr Leu Gly Leu Leu Val Lys Arg Leu Glu Lys Gly Gly Lys
 165 170 175
 Ala Glu His Glu Asn Leu Phe Arg Glu Asn Asp Cys Ile Val Arg Ile
 180 185 190
 Asn Asp Gly Asp Leu Arg Asn Arg Arg Phe Glu Gln Ala Gln His Met
 195 200 205
 Phe Arg Gln Ala Met Arg Thr Pro Ile Ile Trp Phe His Val Val Pro
 210 215 220
 Ala Ala Asn Lys Glu Gln Tyr Glu Gln Leu Ser Gln Ser Glu Lys Asn
 225 230 235 240
 Asn Tyr Tyr Ser Ser Arg Phe Ser Pro Asp Ser Gln Tyr Ile Asp Asn

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Arg | Ser | Val | Asn | Ser | Ala | Gly | Leu | His | Thr | Val | Gln | Arg | Ala | Pro | Arg |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Leu | Asn | His | Pro | Pro | Glu | Gln | Ile | Asp | Ser | His | Ser | Arg | Leu | Pro | His |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Ser | Ala | His | Pro | Ser | Gly | Lys | Pro | Pro | Ser | Ala | Pro | Ala | Ser | Ala | Pro |
| | | 290 | | | | 295 | | | | | 300 | | | | |
| Gln | Asn | Val | Phe | Ser | Thr | Thr | Val | Ser | Ser | Gly | Tyr | Asn | Thr | Lys | Lys |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Ile | Gly | Lys | Arg | Leu | Asn | Ile | Gln | Leu | Lys | Lys | Gly | Thr | Glu | Gly | Leu |
| | | | | 325 | | | | | 330 | | | | | 335 | |
| Gly | Phe | Ser | Ile | Thr | Ser | Arg | Asp | Val | Thr | Ile | Gly | Gly | Ser | Ala | Pro |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Ile | Tyr | Val | Lys | Asn | Ile | Leu | Pro | Arg | Gly | Ala | Ala | Ile | Gln | Asp | Gly |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Arg | Leu | Lys | Ala | Gly | Asp | Arg | Leu | Ile | Glu | Val | Asn | Gly | Val | Asp | Leu |
| | 370 | | | | 375 | | | | | | 380 | | | | |
| Val | Gly | Lys | Ser | Gln | Glu | Glu | Val | Val | Ser | Leu | Leu | Arg | Ser | Thr | Lys |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Met | Glu | Gly | Thr | Val | Ser | Leu | Leu | Val | Phe | Arg | Gln | Glu | Asp | Ala | Phe |
| | | | | 405 | | | | | 410 | | | | | 415 | |
| His | Pro | Arg | Glu | Leu | Asn | Ala | Glu | Pro | Ser | Gln | Met | Gln | Ile | Pro | Lys |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Glu | Thr | Lys | Ala | Glu | Asp | Glu | Asp | Ile | Val | Leu | Thr | Pro | Asp | Gly | Thr |
| | | 435 | | | | | 440 | | | | | 445 | | | |
| Arg | Glu | Phe | Leu | Thr | Phe | Glu | Val | Pro | Leu | Ser | Asp | Ser | Gly | Ser | Ala |
| | 450 | | | | 455 | | | | | | 460 | | | | |
| Gly | Leu | Gly | Val | Ser | Val | Lys | Gly | Asn | Arg | Ser | Lys | Glu | Asn | His | Ala |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Asp | Leu | Gly | Ile | Phe | Val | Lys | Ser | Ile | Ile | Asn | Gly | Gly | Ala | Ala | Ser |
| | | | | 485 | | | | | 490 | | | | | 495 | |
| Lys | Asp | Gly | Arg | Leu | Arg | Val | Asn | Asp | Gln | Leu | Ile | Ala | Val | Asn | Gly |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Glu | Ser | Leu | Leu | Gly | Lys | Thr | Asn | Gln | Asp | Ala | Met | Glu | Thr | Leu | Arg |
| | | 515 | | | | | 520 | | | | | 525 | | | |
| Arg | Ser | Met | Ser | Thr | Glu | Gly | Asn | Lys | Arg | Gly | Met | Ile | Gln | Leu | Ile |
| | 530 | | | | | 535 | | | | | 540 | | | | |
| Val | Ala | Arg | Arg | Ile | Ser | Lys | Cys | Asn | Glu | Leu | Lys | Ser | Pro | Gly | Ser |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 |
| Pro | Pro | Gly | Pro | Glu | Leu | Pro | Ile | Glu | Thr | Ala | Leu | Asp | Asp | Arg | Glu |
| | | | | 565 | | | | | 570 | | | | | 575 | |
| Arg | Arg | Ile | Ser | His | Ser | Leu | Tyr | Ser | Gly | Ile | Glu | Gly | Leu | Asp | Glu |
| | | | 580 | | | | | 585 | | | | | 590 | | |
| Ser | Pro | Ser | Arg | Asn | Ala | Ala | Leu | Ser | Arg | Ile | Met | Gly | Lys | Tyr | Gln |
| | | 595 | | | | | | | | | | | | | |

Pro Ser Arg Asp Val Gly Pro Ser Leu Gly Leu Lys Lys Ser Ser Ser
 705 710 715 720
 Leu Glu Ser Leu Gln Thr Ala Val Ala Glu Val Thr Leu Asn Gly Asp
 725 730 735
 Ile Pro Phe His Arg Pro Arg Pro Arg Ile Ile Arg Gly Arg Gly Cys
 740 745 750
 Asn Glu Ser Phe Arg Ala Ala Ile Asp Lys Ser Tyr Asp Lys Pro Ala
 755 760 765
 Val Asp Asp Asp Glu Gly Met Glu Thr Leu Glu Glu Asp Thr Glu
 770 775 780
 Glu Ser Ser Arg Ser Gly Arg Glu Ser Val Ser Thr Ala Ser Asp Gln
 785 790 795 800
 Pro Ser His Ser Leu Glu Arg Gln Met Asn Gly Asn Gln Glu Lys Gly
 805 810 815
 Asp Lys Thr Asp Arg Lys Lys Asp Lys Thr Gly Lys Glu Lys Lys Lys
 820 825 830
 Asp Arg Asp Lys Glu Lys Asp Lys Met Lys Ala Lys Lys Gly Met Leu
 835 840 845
 Lys Gly Leu Gly Asp Met Phe Ser Leu Ala Lys Leu Lys Pro Glu Lys
 850 855 860
 Arg
 865

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 <212> RNA
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<220>
 <223> Artificially Synthesized Sequence

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30

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 <212> DNA
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42

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21

<210> 8

<211> 21
 <212> DNA
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 <223> Artificially Synthesized Primer Sequence

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21

<210> 9
 <211> 433
 <212> PRT
 <213> Homo sapiens

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 Glu Val Ile Tyr Gln Pro Arg Arg Lys Arg Ala Lys Leu Ile Gly Lys
 35 40 45
 Tyr Leu Met Gly Asp Leu Leu Gly Glu Gly Ser Tyr Gly Lys Val Lys
 50 55 60
 Glu Val Leu Asp Ser Glu Thr Leu Cys Arg Arg Ala Val Lys Ile Leu
 65 70 75 80
 Lys Lys Lys Lys Leu Arg Arg Ile Pro Asn Gly Glu Ala Asn Val Lys
 85 90 95
 Lys Glu Ile Gln Leu Leu Arg Arg Leu Arg His Lys Asn Val Ile Gln
 100 105 110
 Leu Val Asp Val Leu Tyr Asn Glu Glu Lys Gln Lys Met Tyr Met Val
 115 120 125
 Met Glu Tyr Cys Val Cys Gly Met Gln Glu Met Leu Asp Ser Val Pro
 130 135 140
 Glu Lys Arg Phe Pro Val Cys Gln Ala His Gly Tyr Phe Cys Gln Leu
 145 150 155 160
 Ile Asp Gly Leu Glu Tyr Leu His Ser Gln Gly Ile Val His Lys Asp
 165 170 175
 Ile Lys Pro Gly Asn Leu Leu Leu Thr Thr Gly Gly Thr Leu Lys Ile
 180 185 190
 Ser Asp Leu Gly Val Ala Glu Ala Leu His Pro Phe Ala Ala Asp Asp
 195 200 205
 Thr Cys Arg Thr Ser Gln Gly Ser Pro Ala Phe Gln Pro Pro Glu Ile
 210 215 220
 Ala Asn Gly Leu Asp Thr Phe Ser Gly Phe Lys Val Asp Ile Trp Ser
 225 230 235 240
 Ala Gly Val Thr Leu Tyr Asn Ile Thr Thr Gly Leu Tyr Pro Phe Glu
 245 250 255
 Gly Asp Asn Ile Tyr Lys Leu Phe Glu Asn Ile Gly Lys Gly Ser Tyr
 260 265 270
 Ala Ile Pro Gly Asp Cys Gly Pro Pro Leu Ser Asp Leu Leu Lys Gly
 275 280 285
 Met Leu Glu Tyr Glu Pro Ala Lys Arg Phe Ser Ile Arg Gln Ile Arg
 290 295 300
 Gln His Ser Trp Phe Arg Lys Lys His Pro Pro Ala Glu Ala Pro Val
 305 310 315 320
 Pro Ile Pro Pro Ser Pro Asp Thr Lys Asp Arg Trp Arg Ser Met Thr

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          325          330          335
Val Val Pro Tyr Leu Glu Asp Leu His Gly Ala Asp Glu Asp Glu Asp
          340          345          350
Leu Phe Asp Ile Glu Asp Asp Ile Ile Tyr Thr Gln Asp Phe Thr Val
          355          360          365
Pro Gly Gln Val Pro Glu Glu Glu Ala Ser His Asn Gly Gln Arg Arg
          370          375          380
Gly Leu Pro Lys Ala Val Cys Met Asn Gly Thr Glu Ala Ala Gln Leu
385          390          395          400
Ser Thr Lys Ser Arg Ala Glu Gly Arg Ala Pro Asn Pro Ala Arg Lys
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Ala Cys Ser Ala Ser Ser Lys Ile Arg Arg Leu Ser Ala Cys Lys Gln
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Gln

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<210> 10
<211> 396
<212> PRT
<213> Homo sapiens

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Ala Lys Lys Glu Trp Lys Val Gly Leu Pro Ile Gly Gln Gly Gly Phe
          35          40          45
Gly Cys Ile Tyr Leu Ala Asp Met Asn Ser Ser Glu Ser Val Gly Ser
          50          55          60
Asp Ala Pro Cys Val Val Lys Val Glu Pro Ser Asp Asn Gly Pro Leu
          65          70          75          80
Phe Thr Glu Leu Lys Phe Tyr Gln Arg Ala Ala Lys Pro Glu Gln Ile
          85          90          95
Gln Lys Trp Ile Arg Thr Arg Lys Leu Lys Tyr Leu Gly Val Pro Lys
          100          105          110
Tyr Trp Gly Ser Gly Leu His Asp Lys Asn Gly Lys Ser Tyr Arg Phe
          115          120          125
Met Ile Met Asp Arg Phe Gly Ser Asp Leu Gln Lys Ile Tyr Glu Ala
          130          135          140
Asn Ala Lys Arg Phe Ser Arg Lys Thr Val Leu Gln Leu Ser Leu Arg
          145          150          155          160
Ile Leu Asp Ile Leu Glu Tyr Ile His Glu His Glu Tyr Val His Gly
          165          170          175
Asp Ile Lys Ala Ser Asn Leu Leu Leu Asn Tyr Lys Asn Pro Asp Gln
          180          185          190
Val Tyr Leu Val Asp Tyr Gly Leu Ala Tyr Arg Tyr Cys Pro Glu Gly
          195          200          205
Val His Lys Glu Tyr Lys Glu Asp Pro Lys Arg Cys His Asp Gly Thr
          210          215          220
Ile Glu Phe Thr Ser Ile Asp Ala His Asn Gly Val Ala Pro Ser Arg
          225          230          235          240
Arg Gly Asp Leu Glu Ile Leu Gly Tyr Cys Met Ile Gln Trp Leu Thr
          245          250          255
Gly His Leu Pro Trp Glu Asp Asn Leu Lys Asp Pro Lys Tyr Val Arg
          260          265          270
Asp Ser Lys Ile Arg Tyr Arg Glu Asn Ile Ala Ser Leu Met Asp Lys

```

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Cys | Phe | Pro | Glu | Lys | Asn | Lys | Pro | Gly | Glu | Ile | Ala | Lys | Tyr | Met | Glu |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Thr | Val | Lys | Leu | Leu | Asp | Tyr | Thr | Glu | Lys | Pro | Leu | Tyr | Glu | Asn | Leu |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Arg | Asp | Ile | Leu | Leu | Gln | Gly | Leu | Lys | Ala | Ile | Gly | Ser | Lys | Asp | Asp |
| | | | 325 | | | | | | 330 | | | | | 335 | |
| Gly | Lys | Leu | Asp | Leu | Ser | Val | Val | Glu | Asn | Gly | Gly | Leu | Lys | Ala | Lys |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Thr | Ile | Thr | Lys | Lys | Arg | Lys | Lys | Glu | Ile | Glu | Glu | Ser | Lys | Glu | Pro |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Gly | Val | Glu | Asp | Thr | Glu | Trp | Ser | Asn | Thr | Gln | Thr | Glu | Glu | Ala | Ile |
| | 370 | | | | | 375 | | | | 380 | | | | | |
| Gln | Thr | Arg | Ser | Arg | Thr | Arg | Lys | Arg | Val | Gln | Lys | | | | |
| 385 | | | | | 390 | | | | | 395 | | | | | |

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<210> 11
<211> 297
<212> PRT
<213> Homo sapiens
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| | | | | | | | | | | | | | | | |
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| <400> | 11 | | | | | | | | | | | | | | |
| Met | Glu | Asp | Tyr | Thr | Lys | Ile | Glu | Lys | Ile | Gly | Glu | Gly | Thr | Tyr | Gly |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Val | Val | Tyr | Lys | Gly | Arg | His | Lys | Thr | Thr | Gly | Gln | Val | Val | Ala | Met |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Lys | Lys | Ile | Arg | Leu | Glu | Ser | Glu | Glu | Glu | Gly | Val | Pro | Ser | Thr | Ala |
| | | 35 | | | | 40 | | | | | | 45 | | | |
| Ile | Arg | Glu | Ile | Ser | Leu | Leu | Lys | Glu | Leu | Arg | His | Pro | Asn | Ile | Val |
| | 50 | | | | 55 | | | | | 60 | | | | | |
| Ser | Leu | Gln | Asp | Val | Leu | Met | Gln | Asp | Ser | Arg | Leu | Tyr | Leu | Ile | Phe |
| 65 | | | | 70 | | | | 75 | | | | | | | 80 |
| Glu | Phe | Leu | Ser | Met | Asp | Leu | Lys | Lys | Tyr | Leu | Asp | Ser | Ile | Pro | Pro |
| | | | | 85 | | | | 90 | | | | | | 95 | |
| Gly | Gln | Tyr | Met | Asp | Ser | Ser | Leu | Val | Lys | Ser | Tyr | Leu | Tyr | Gln | Ile |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Leu | Gln | Gly | Ile | Val | Phe | Cys | His | Ser | Arg | Arg | Val | Leu | His | Arg | Asp |
| | | 115 | | | | 120 | | | | | 125 | | | | |
| Leu | Lys | Pro | Gln | Asn | Leu | Leu | Ile | Asp | Asp | Lys | Gly | Thr | Ile | Lys | Leu |
| | 130 | | | | 135 | | | | | | 140 | | | | |
| Ala | Asp | Phe | Gly | Leu | Ala | Arg | Ala | Phe | Gly | Ile | Pro | Ile | Arg | Val | Tyr |
| 145 | | | | 150 | | | | | | 155 | | | | | 160 |
| Thr | His | Glu | Val | Val | Thr | Leu | Trp | Tyr | Arg | Ser | Pro | Glu | Val | Leu | Leu |
| | | | | 165 | | | | 170 | | | | | | 175 | |
| Gly | Ser | Ala | Arg | Tyr | Ser | Thr | Pro | Val | Asp | Ile | Trp | Ser | Ile | Gly | Thr |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Ile | Phe | Ala | Glu | Leu | Ala | Thr | Lys | Lys | Pro | Leu | Phe | His | Gly | Asp | Ser |
| | | 195 | | | | 200 | | | | | | 205 | | | |
| Glu | Ile | Asp | Gln | Leu | Phe | Arg | Ile | Phe | Arg | Ala | Leu | Gly | Thr | Pro | Asn |
| | 210 | | | | 215 | | | | | 220 | | | | | |
| Asn | Glu | Val | Trp | Pro | Glu | Val | Glu | Ser | Leu | Gln | Asp | Tyr | Lys | Asn | Thr |
| 225 | | | | 230 | | | | | | 235 | | | | 240 | |
| Phe | Pro | Lys | Trp | Lys | Pro | Gly | Ser | Leu | Ala | Ser | His | Val | Lys | Asn | Leu |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Asp | Glu | Asn | Gly | Leu | Asp | Leu | Leu | Ser | Lys | Met | Leu | Ile | Tyr | Asp | Pro |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Ala | Lys | Arg | Ile | Ser | Gly | Lys | Met | Ala | Leu | Asn | His | Pro | Tyr | Phe | Asn |

275 280 285
 Asp Leu Asp Asn Gln Ile Lys Lys Met
 290 295

<210> 12
 <211> 403
 <212> PRT
 <213> Homo sapiens

<400> 12

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| Met | Asp | Arg | Ser | Lys | Glu | Asn | Cys | Ile | Ser | Gly | Pro | Val | Lys | Ala | Thr |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Ala | Pro | Val | Gly | Gly | Pro | Lys | Arg | Val | Leu | Val | Thr | Gln | Gln | Phe | Pro |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Cys | Gln | Asn | Pro | Leu | Pro | Val | Asn | Ser | Gly | Gln | Ala | Gln | Arg | Val | Leu |
| | | 35 | | | | | 40 | | | | 45 | | | | |
| Cys | Pro | Ser | Asn | Ser | Ser | Gln | Arg | Ile | Pro | Leu | Gln | Ala | Gln | Lys | Leu |
| | 50 | | | | | 55 | | | | 60 | | | | | |
| Val | Ser | Ser | His | Lys | Pro | Val | Gln | Asn | Gln | Lys | Gln | Lys | Gln | Leu | Gln |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 |
| Ala | Thr | Ser | Val | Pro | His | Pro | Val | Ser | Arg | Pro | Leu | Asn | Asn | Thr | Gln |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Lys | Ser | Lys | Gln | Pro | Leu | Pro | Ser | Ala | Pro | Glu | Asn | Asn | Pro | Glu | Glu |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Glu | Leu | Ala | Ser | Lys | Gln | Lys | Asn | Glu | Glu | Ser | Lys | Lys | Arg | Gln | Trp |
| | | 115 | | | | | 120 | | | | 125 | | | | |
| Ala | Leu | Glu | Asp | Phe | Glu | Ile | Gly | Arg | Pro | Leu | Gly | Lys | Gly | Lys | Phe |
| | 130 | | | | | 135 | | | | | 140 | | | | |
| Gly | Asn | Val | Tyr | Leu | Ala | Arg | Glu | Lys | Gln | Ser | Lys | Phe | Ile | Leu | Ala |
| 145 | | | | 150 | | | | | 155 | | | | | 160 | |
| Leu | Lys | Val | Leu | Phe | Lys | Ala | Gln | Leu | Glu | Lys | Ala | Gly | Val | Glu | His |
| | | | 165 | | | | | 170 | | | | | 175 | | |
| Gln | Leu | Arg | Arg | Glu | Val | Glu | Ile | Gln | Ser | His | Leu | Arg | His | Pro | Asn |
| | | 180 | | | | | | 185 | | | | 190 | | | |
| Ile | Leu | Arg | Leu | Tyr | Gly | Tyr | Phe | His | Asp | Ala | Thr | Arg | Val | Tyr | Leu |
| | 195 | | | | | 200 | | | | | | 205 | | | |
| Ile | Leu | Glu | Tyr | Ala | Pro | Leu | Gly | Thr | Val | Tyr | Arg | Glu | Leu | Gln | Lys |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Leu | Ser | Lys | Phe | Asp | Glu | Gln | Arg | Thr | Ala | Thr | Tyr | Ile | Thr | Glu | Leu |
| 225 | | | | 230 | | | | | | 235 | | | | 240 | |
| Ala | Asn | Ala | Leu | Ser | Tyr | Cys | His | Ser | Lys | Arg | Val | Ile | His | Arg | Asp |
| | | | 245 | | | | | | 250 | | | | | 255 | |
| Ile | Lys | Pro | Glu | Asn | Leu | Leu | Leu | Gly | Ser | Ala | Gly | Glu | Leu | Lys | Ile |
| | | 260 | | | | | | 265 | | | | | 270 | | |
| Ala | Asp | Phe | Gly | Trp | Ser | Val | His | Ala | Pro | Ser | Ser | Arg | Arg | Thr | Thr |
| | 275 | | | | | | 280 | | | | | 285 | | | |
| Leu | Cys | Gly | Thr | Leu | Asp | Tyr | Leu | Pro | Pro | Glu | Met | Ile | Glu | Gly | Arg |
| | 290 | | | | 295 | | | | | | 300 | | | | |
| Met | His | Asp | Glu | Lys | Val | Asp | Leu | Trp | Ser | Leu | Gly | Val | Leu | Cys | Tyr |
| 305 | | | | | 310 | | | | | 315 | | | | 320 | |
| Glu | Phe | Leu | Val | Gly | Lys | Pro | Pro | Phe | Glu | Ala | Asn | Thr | Tyr | Gln | Glu |
| | | | 325 | | | | | | 330 | | | | | 335 | |
| Thr | Tyr | Lys | Arg | Ile | Ser | Arg | Val | Glu | Phe | Thr | Phe | Pro | Asp | Phe | Val |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Thr | Glu | Gly | Ala | Arg | Asp | Leu | Ile | Ser | Arg | Leu | Leu | Lys | His | Asn | Pro |
| | 355 | | | | | 360 | | | | | | 365 | | | |
| Ser | Gln | Arg | Pro | Met | Leu | Arg | Glu | Val | Leu | Glu | His | Pro | Trp | Ile | Thr |

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Ala Asn Ser Ser Lys Pro Ser Asn Cys Gln Asn Lys Glu Ser Ala Ser
385 390 395 400
Lys Gln Ser

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<211> 344
<212> PRT
<213> Homo sapiens
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[illegible]

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 <211> 745
 <212> PRT
 <213> Homo sapiens

<400> 14

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| Met | Glu | Arg | Pro | Pro | Gly | Leu | Arg | Pro | Gly | Ala | Gly | Gly | Pro | Trp | Glu |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Met | Arg | Glu | Arg | Leu | Gly | Thr | Gly | Gly | Phe | Gly | Asn | Val | Cys | Leu | Tyr |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Gln | His | Arg | Glu | Leu | Asp | Leu | Lys | Ile | Ala | Ile | Lys | Ser | Cys | Arg | Leu |
| | | | 35 | | | | 40 | | | | | 45 | | | |
| Glu | Leu | Ser | Thr | Lys | Asn | Arg | Glu | Arg | Trp | Cys | His | Glu | Ile | Gln | Ile |
| | 50 | | | | | 55 | | | | | 60 | | | | |
| Met | Lys | Lys | Leu | Asn | His | Ala | Asn | Val | Val | Lys | Ala | Cys | Asp | Val | Pro |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 |
| Glu | Glu | Leu | Asn | Ile | Leu | Ile | His | Asp | Val | Pro | Leu | Leu | Ala | Met | Glu |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Tyr | Cys | Ser | Gly | Gly | Asp | Leu | Arg | Lys | Leu | Leu | Asn | Lys | Pro | Glu | Asn |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Cys | Cys | Gly | Leu | Lys | Glu | Ser | Gln | Ile | Leu | Ser | Leu | Leu | Ser | Asp | Ile |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Gly | Ser | Gly | Ile | Arg | Tyr | Leu | His | Glu | Asn | Lys | Ile | Ile | His | Arg | Asp |
| | 130 | | | | | 135 | | | | | 140 | | | | |
| Leu | Lys | Pro | Glu | Asn | Ile | Val | Leu | Gln | Asp | Val | Gly | Gly | Lys | Ile | Ile |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| His | Lys | Ile | Ile | Asp | Leu | Gly | Tyr | Ala | Lys | Asp | Val | Asp | Gln | Gly | Ser |
| | | | | 165 | | | | | 170 | | | | | 175 | |
| Leu | Cys | Thr | Ser | Phe | Val | Gly | Thr | Leu | Gln | Tyr | Leu | Ala | Pro | Glu | Leu |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Phe | Glu | Asn | Lys | Pro | Tyr | Thr | Ala | Thr | Val | Asp | Tyr | Trp | Ser | Phe | Gly |
| | | 195 | | | | | 200 | | | | | 205 | | | |
| Thr | Met | Val | Phe | Glu | Cys | Ile | Ala | Gly | Tyr | Arg | Pro | Phe | Leu | His | His |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Leu | Gln | Pro | Phe | Thr | Trp | His | Glu | Lys | Ile | Lys | Lys | Lys | Asp | Pro | Lys |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Cys | Ile | Phe | Ala | Cys | Glu | Glu | Met | Ser | Gly | Glu | Val | Arg | Phe | Ser | Ser |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| His | Leu | Pro | Gln | Pro | Asn | Ser | Leu | Cys | Ser | Leu | Ile | Val | Glu | Pro | Met |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Glu | Asn | Trp | Leu | Gln | Leu | Met | Leu | Asn | Trp | Asp | Pro | Gln | Gln | Arg | Gly |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Gly | Pro | Val | Asp | Leu | Thr | Leu | Lys | Gln | Pro | Arg | Cys | Phe | Val | Leu | Met |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Asp | His | Ile | Leu | Asn | Leu | Lys | Ile | Val | His | Ile | Leu | Asn | Met | Thr | Ser |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Ala | Lys | Ile | Ile | Ser | Phe | Leu | Leu | Pro | Pro | Asp | Glu | Ser | Leu | His | Ser |
| | | | | 325 | | | | | 330 | | | | | 335 | |
| Leu | Gln | Ser | Arg | Ile | Glu | Arg | Glu | Thr | Gly | Ile | Asn | Thr | Gly | Ser | Gln |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Glu | Leu | Leu | Ser | Glu | Thr | Gly | Ile | Ser | Leu | Asp | Pro | Arg | Lys | Pro | Ala |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Ser | Gln | Cys | Val | Leu | Asp | Gly | Val | Arg | Gly | Cys | Asp | Ser | Tyr | Met | Val |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Tyr | Leu | Phe | Asp | Lys | Ser | Lys | Thr | Val | Tyr | Glu | Gly | Pro | Phe | Ala | Ser |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Arg | Ser | Leu | Ser | Asp | Cys | Val | Asn | Tyr | Ile | Val | Gln | Asp | Ser | Lys | Ile |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gln | Leu | Pro | Ile | Ile | Gln | Leu | Arg | Lys | Val | Trp | Ala | Glu | Ala | Val | His |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Tyr | Val | Ser | Gly | Leu | Lys | Glu | Asp | Tyr | Ser | Arg | Leu | Phe | Gln | Gly | Gln |
| | | 435 | | | | | 440 | | | | | 445 | | | |
| Arg | Ala | Ala | Met | Leu | Ser | Leu | Leu | Arg | Tyr | Asn | Ala | Asn | Leu | Thr | Lys |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Met | Lys | Asn | Thr | Leu | Ile | Ser | Ala | Ser | Gln | Gln | Leu | Lys | Ala | Lys | Leu |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Glu | Phe | Phe | His | Lys | Ser | Ile | Gln | Leu | Asp | Leu | Glu | Arg | Tyr | Ser | Glu |
| | | | 485 | | | | | | 490 | | | | | 495 | |
| Gln | Met | Thr | Tyr | Gly | Ile | Ser | Ser | Glu | Lys | Met | Leu | Lys | Ala | Trp | Lys |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Glu | Met | Glu | Glu | Lys | Ala | Ile | His | Tyr | Ala | Glu | Val | Gly | Val | Ile | Gly |
| | | 515 | | | | | 520 | | | | | 525 | | | |
| Tyr | Leu | Glu | Asp | Gln | Ile | Met | Ser | Leu | His | Ala | Glu | Ile | Met | Glu | Leu |
| | 530 | | | | | 535 | | | | | 540 | | | | |
| Gln | Lys | Ser | Pro | Tyr | Gly | Arg | Arg | Gln | Gly | Asp | Leu | Met | Glu | Ser | Leu |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 |
| Glu | Gln | Arg | Ala | Ile | Asp | Leu | Tyr | Lys | Gln | Leu | Lys | His | Arg | Pro | Ser |
| | | | 565 | | | | | | 570 | | | | | 575 | |
| Asp | His | Ser | Tyr | Ser | Asp | Ser | Thr | Glu | Met | Val | Lys | Ile | Ile | Val | His |
| | | | 580 | | | | | 585 | | | | | 590 | | |
| Thr | Val | Gln | Ser | Gln | Asp | Arg | Val | Leu | Lys | Glu | Leu | Phe | Gly | His | Leu |
| | | 595 | | | | | 600 | | | | | 605 | | | |
| Ser | Lys | Leu | Leu | Gly | Cys | Lys | Gln | Lys | Ile | Ile | Asp | Leu | Leu | Pro | Lys |
| | 610 | | | | | 615 | | | | | 620 | | | | |
| Val | Glu | Val | Ala | Leu | Ser | Asn | Ile | Lys | Glu | Ala | Asp | Asn | Thr | Val | Met |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 |
| Phe | Met | Gln | Gly | Lys | Arg | Gln | Lys | Glu | Ile | Trp | His | Leu | Leu | Lys | Ile |
| | | | 645 | | | | | | 650 | | | | | 655 | |
| Ala | Cys | Thr | Gln | Ser | Ser | Ala | Arg | Ser | Leu | Val | Gly | Ser | Ser | Leu | Glu |
| | | | 660 | | | | | 665 | | | | | 670 | | |
| Gly | Ala | Val | Thr | Pro | Gln | Thr | Ser | Ala | Trp | Leu | Pro | Pro | Thr | Ser | Ala |
| | | 675 | | | | | 680 | | | | | 685 | | | |
| Glu | His | Asp | His | Ser | Leu | Ser | Cys | Val | Val | Thr | Pro | Gln | Asp | Gly | Glu |
| | 690 | | | | | 695 | | | | | 700 | | | | |
| Thr | Ser | Ala | Gln | Met | Ile | Glu | Glu | Asn | Leu | Asn | Cys | Leu | Gly | His | Leu |
| 705 | | | | | 710 | | | | | 715 | | | | | 720 |
| Ser | Thr | Ile | Ile | His | Glu | Ala | Asn | Glu | Glu | Gln | Gly | Asn | Ser | Met | Met |
| | | | 725 | | | | | | 730 | | | | | 735 | |
| Asn | Leu | Asp | Trp | Ser | Trp | Leu | Thr | Glu | | | | | | | |
| | | 740 | | | | | | 745 | | | | | | | |

<210> 15

<211> 318

<212> PRT

<213> Homo sapiens

<400> 15

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ser | Lys | Pro | Pro | Ala | Pro | Asn | Pro | Thr | Pro | Pro | Arg | Asn | Leu | Asp |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Ser | Arg | Thr | Phe | Ile | Thr | Ile | Gly | Asp | Arg | Asn | Phe | Glu | Val | Glu | Ala |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Asp | Asp | Leu | Val | Thr | Ile | Ser | Glu | Leu | Gly | Arg | Gly | Ala | Tyr | Gly | Val |
| | | 35 | | | | | 40 | | | | | 45 | | | |
| Val | Glu | Lys | Val | Arg | His | Ala | Gln | Ser | Gly | Thr | Ile | Met | Ala | Val | Lys |

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|--|
| 50 | 55 | 60 | | | | | | | | | | | | | | | | | |
| Arg | Ile | Arg | Ala | Thr | Val | Asn | Ser | Gln | Glu | Gln | Lys | Arg | Leu | Leu | Met | | | | |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 | | | | |
| Asp | Leu | Asp | Ile | Asn | Met | Arg | Thr | Val | Asp | Cys | Phe | Tyr | Thr | Val | Thr | | | | |
| | | | | 85 | | | | | 90 | | | | | 95 | | | | | |
| Phe | Tyr | Gly | Ala | Leu | Phe | Arg | Glu | Gly | Asp | Val | Trp | Ile | Cys | Met | Glu | | | | |
| | | | 100 | | | | | 105 | | | | | 110 | | | | | | |
| Leu | Met | Asp | Thr | Ser | Leu | Asp | Lys | Phe | Tyr | Arg | Lys | Val | Leu | Asp | Lys | | | | |
| | | 115 | | | | | 120 | | | | | 125 | | | | | | | |
| Asn | Met | Thr | Ile | Pro | Glu | Asp | Ile | Leu | Gly | Glu | Ile | Ala | Val | Ser | Ile | | | | |
| | 130 | | | | | 135 | | | | | 140 | | | | | | | | |
| Val | Arg | Ala | Leu | Glu | His | Leu | His | Ser | Lys | Leu | Ser | Val | Ile | His | Arg | | | | |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 | | | | |
| Asp | Val | Lys | Pro | Ser | Asn | Val | Leu | Ile | Asn | Lys | Glu | Gly | His | Val | Lys | | | | |
| | | | | 165 | | | | | 170 | | | | | 175 | | | | | |
| Met | Cys | Asp | Phe | Gly | Ile | Ser | Gly | Tyr | Leu | Val | Asp | Ser | Val | Ala | Lys | | | | |
| | | | 180 | | | | | 185 | | | | | 190 | | | | | | |
| Thr | Met | Asp | Ala | Gly | Cys | Lys | Pro | Tyr | Met | Ala | Pro | Glu | Arg | Ile | Asn | | | | |
| | | 195 | | | | | 200 | | | | | 205 | | | | | | | |
| Pro | Glu | Leu | Asn | Gln | Lys | Gly | Tyr | Asn | Val | Lys | Ser | Asp | Val | Trp | Ser | | | | |
| | 210 | | | | | 215 | | | | | 220 | | | | | | | | |
| Leu | Gly | Ile | Thr | Met | Ile | Glu | Met | Ala | Ile | Leu | Arg | Phe | Pro | Tyr | Glu | | | | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | | | | |
| Ser | Trp | Gly | Thr | Pro | Phe | Gln | Gln | Leu | Lys | Gln | Val | Val | Glu | Glu | Pro | | | | |
| | | | | 245 | | | | | 250 | | | | | 255 | | | | | |
| Ser | Pro | Gln | Leu | Pro | Ala | Asp | Arg | Phe | Ser | Pro | Glu | Phe | Val | Asp | Phe | | | | |
| | | | 260 | | | | | 265 | | | | | 270 | | | | | | |
| Thr | Ala | Gln | Cys | Leu | Arg | Lys | Asn | Pro | Ala | Glu | Arg | Met | Ser | Tyr | Leu | | | | |
| | | 275 | | | | | 280 | | | | | 285 | | | | | | | |
| Glu | Leu | Met | Glu | His | Pro | Phe | Phe | Thr | Leu | His | Lys | Thr | Lys | Lys | Thr | | | | |
| | 290 | | | | | 295 | | | | | 300 | | | | | | | | |
| Asp | Ile | Ala | Ala | Phe | Val | Lys | Lys | Ile | Leu | Gly | Glu | Asp | Ser | | | | | | |
| 305 | | | | | 310 | | | | | 315 | | | | | | | | | |

<210> 16

<211> 379

<212> PRT

<213> Homo sapiens

<400> 16

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|--|
| Met | Ala | Ala | Ala | Ala | Ala | Gln | Gly | Gly | Gly | Gly | Gly | Glu | Pro | Arg | Arg | | | | |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | | | | | |
| Thr | Glu | Gly | Val | Gly | Pro | Gly | Val | Pro | Gly | Glu | Val | Glu | Met | Val | Lys | | | | |
| | | | 20 | | | | | 25 | | | | | 30 | | | | | | |
| Gly | Gln | Pro | Phe | Asp | Val | Gly | Pro | Arg | Tyr | Thr | Gln | Leu | Gln | Tyr | Ile | | | | |
| | | 35 | | | | 40 | | | | | 45 | | | | | | | | |
| Gly | Glu | Gly | Ala | Tyr | Gly | Met | Val | Ser | Ser | Ala | Tyr | Asp | His | Val | Arg | | | | |
| | 50 | | | | 55 | | | | | 60 | | | | | | | | | |
| Lys | Thr | Arg | Val | Ala | Ile | Lys | Lys | Ile | Ser | Pro | Phe | Glu | His | Gln | Thr | | | | |
| 65 | | | | 70 | | | | | 75 | | | | | 80 | | | | | |
| Tyr | Cys | Gln | Arg | Thr | Leu | Arg | Glu | Ile | Gln | Ile | Leu | Leu | Arg | Phe | Arg | | | | |
| | | | | 85 | | | | 90 | | | | | | 95 | | | | | |
| His | Glu | Asn | Val | Ile | Gly | Ile | Arg | Asp | Ile | Leu | Arg | Ala | Ser | Thr | Leu | | | | |
| | | 100 | | | | | 105 | | | | | 110 | | | | | | | |
| Glu | Ala | Met | Arg | Asp | Val | Tyr | Ile | Val | Gln | Asp | Leu | Met | Glu | Thr | Asp | | | | |
| | | 115 | | | | | 120 | | | | | 125 | | | | | | | |
| Leu | Tyr | Lys | Leu | Leu | Lys | Ser | Gln | Gln | Leu | Ser | Asn | Asp | His | Ile | Cys | | | | |

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      130              135              140
Tyr Phe Leu Tyr Gln Ile Leu Arg Gly Leu Lys Tyr Ile His Ser Ala
145              150              155              160
Asn Val Leu His Arg Asp Leu Lys Pro Ser Asn Leu Leu Ser Asn Thr
      165              170              175
Thr Cys Asp Leu Lys Ile Cys Asp Phe Gly Leu Ala Arg Ile Ala Asp
      180              185              190
Pro Glu His Asp His Thr Gly Phe Leu Thr Glu Tyr Val Ala Thr Arg
      195              200              205
Trp Tyr Arg Ala Pro Glu Ile Met Leu Asn Ser Lys Gly Tyr Thr Lys
      210              215              220
Ser Ile Asp Ile Trp Ser Val Gly Cys Ile Leu Ala Glu Met Leu Ser
225              230              235              240
Asn Arg Pro Ile Phe Pro Gly Lys His Tyr Leu Asp Gln Leu Asn His
      245              250              255
Ile Leu Gly Ile Leu Gly Ser Pro Ser Gln Glu Asp Leu Asn Cys Ile
      260              265              270
Ile Asn Met Lys Ala Arg Asn Tyr Leu Gln Ser Leu Pro Ser Lys Thr
      275              280              285
Lys Val Ala Trp Ala Lys Leu Phe Pro Lys Ser Asp Ser Lys Ala Leu
      290              295              300
Asp Leu Leu Asp Arg Met Leu Thr Phe Asn Pro Asn Lys Arg Ile Thr
305              310              315              320
Val Glu Glu Ala Leu Ala His Pro Tyr Leu Glu Gln Tyr Tyr Asp Pro
      325              330              335
Thr Asp Glu Pro Val Ala Glu Glu Pro Phe Thr Phe Ala Met Glu Leu
      340              345              350
Asp Asp Leu Pro Lys Glu Arg Leu Lys Glu Leu Ile Phe Gln Glu Thr
      355              360              365
Ala Arg Phe Gln Pro Gly Val Leu Glu Ala Pro
      370              375

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<210> 17

<211> 648

<212> PRT

<213> Homo sapiens

<400> 17

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Met Glu His Ile Gln Gly Ala Trp Lys Thr Ile Ser Asn Gly Phe Gly
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Phe Lys Asp Ala Val Phe Asp Gly Ser Ser Cys Ile Ser Pro Thr Ile
      20              25              30
Val Gln Gln Phe Gly Tyr Gln Arg Arg Ala Ser Asp Asp Gly Lys Leu
      35              40              45
Thr Asp Pro Ser Lys Thr Ser Asn Thr Ile Arg Val Phe Leu Pro Asn
      50              55              60
Lys Gln Arg Thr Val Val Asn Val Arg Asn Gly Met Ser Leu His Asp
      65              70              75              80
Cys Leu Met Lys Ala Leu Lys Val Arg Gly Leu Gln Pro Glu Cys Cys
      85              90              95
Ala Val Phe Arg Leu Leu His Glu His Lys Gly Lys Lys Ala Arg Leu
      100              105              110
Asp Trp Asn Thr Asp Ala Ala Ser Leu Ile Gly Glu Glu Leu Gln Val
      115              120              125
Asp Phe Leu Asp His Val Pro Leu Thr Thr His Asn Phe Ala Arg Lys
      130              135              140
Thr Phe Leu Lys Leu Ala Phe Cys Asp Ile Cys Gln Lys Phe Leu Leu

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| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 145 | | | | | 150 | | | | | 155 | | | | 160 |
| Asn | Gly | Phe | Arg | Cys | Gln | Thr | Cys | Gly | Tyr | Lys | Phe | His | Glu | His |
| | | | | 165 | | | | | 170 | | | | | 175 |
| Ser | Thr | Lys | Val | Pro | Thr | Met | Cys | Val | Asp | Trp | Ser | Asn | Ile | Arg |
| | | | 180 | | | | | 185 | | | | | 190 | |
| Leu | Leu | Leu | Phe | Pro | Asn | Ser | Thr | Ile | Gly | Asp | Ser | Gly | Val | Pro |
| | | 195 | | | | | 200 | | | | | 205 | | |
| Leu | Pro | Ser | Leu | Thr | Met | Arg | Arg | Met | Arg | Glu | Ser | Val | Ser | Arg |
| | 210 | | | | | 215 | | | | | | 220 | | |
| Pro | Val | Ser | Ser | Gln | His | Arg | Tyr | Ser | Thr | Pro | His | Ala | Phe | Thr |
| | 225 | | | | 230 | | | | | | 235 | | | 240 |
| Asn | Thr | Ser | Ser | Pro | Ser | Ser | Glu | Gly | Ser | Leu | Ser | Gln | Arg | Gln |
| | | | | 245 | | | | | 250 | | | | | 255 |
| Ser | Thr | Ser | Thr | Pro | Asn | Val | His | Met | Val | Ser | Thr | Thr | Leu | Pro |
| | | | 260 | | | | | 265 | | | | | 270 | |
| Asp | Ser | Arg | Met | Ile | Glu | Asp | Ala | Ile | Arg | Ser | His | Ser | Glu | Ser |
| | | 275 | | | | | 280 | | | | | 285 | | |
| Ser | Pro | Ser | Ala | Leu | Ser | Ser | Ser | Pro | Asn | Asn | Leu | Ser | Pro | Thr |
| | 290 | | | | | 295 | | | | | 300 | | | |
| Trp | Ser | Gln | Pro | Lys | Thr | Pro | Val | Pro | Ala | Gln | Arg | Glu | Arg | Ala |
| | 305 | | | | 310 | | | | | 315 | | | | 320 |
| Val | Ser | Gly | Thr | Gln | Glu | Lys | Asn | Lys | Ile | Arg | Pro | Arg | Gly | Gln |
| | | | 325 | | | | | | 330 | | | | | 335 |
| Asp | Ser | Ser | Tyr | Tyr | Trp | Glu | Ile | Glu | Ala | Ser | Glu | Val | Met | Leu |
| | | | 340 | | | | | 345 | | | | | 350 | |
| Thr | Arg | Ile | Gly | Ser | Gly | Ser | Phe | Gly | Thr | Val | Tyr | Lys | Gly | Lys |
| | | 355 | | | | | 360 | | | | | 365 | | |
| His | Gly | Asp | Val | Ala | Val | Lys | Ile | Leu | Lys | Val | Val | Asp | Pro | Thr |
| | 370 | | | | | 375 | | | | | 380 | | | |
| Glu | Gln | Phe | Gln | Ala | Phe | Arg | Asn | Glu | Val | Ala | Val | Leu | Arg | Lys |
| | 385 | | | | 390 | | | | | 395 | | | | 400 |
| Arg | His | Val | Asn | Ile | Leu | Leu | Phe | Met | Gly | Tyr | Met | Thr | Lys | Asp |
| | | | 405 | | | | | | 410 | | | | | 415 |
| Leu | Ala | Ile | Val | Thr | Gln | Trp | Cys | Glu | Gly | Ser | Ser | Leu | Tyr | Lys |
| | | | 420 | | | | | 425 | | | | | 430 | |
| Leu | His | Val | Gln | Glu | Thr | Lys | Phe | Gln | Met | Phe | Gln | Leu | Ile | Asp |
| | | 435 | | | | | 440 | | | | | 445 | | |
| Ala | Arg | Gln | Thr | Ala | Gln | Gly | Met | Asp | Tyr | Leu | His | Ala | Lys | Asn |
| | 450 | | | | | 455 | | | | | 460 | | | |
| Ile | His | Arg | Asp | Met | Lys | Ser | Asn | Asn | Ile | Phe | Leu | His | Glu | Gly |
| | 465 | | | | 470 | | | | | 475 | | | | 480 |
| Thr | Val | Lys | Ile | Gly | Asp | Phe | Gly | Leu | Ala | Thr | Val | Lys | Ser | Arg |
| | | | 485 | | | | | 490 | | | | | | 495 |
| Ser | Gly | Ser | Gln | Gln | Val | Glu | Gln | Pro | Thr | Gly | Ser | Val | Leu | Trp |
| | | | 500 | | | | | 505 | | | | | 510 | |
| Ala | Pro | Glu | Val | Ile | Arg | Met | Gln | Asp | Asn | Asn | Pro | Phe | Ser | Phe |
| | | 515 | | | | | 520 | | | | | 525 | | |
| Ser | Asp | Val | Tyr | Ser | Tyr | Gly | Ile | Val | Leu | Tyr | Glu | Leu | Met | Thr |
| | 530 | | | | | 535 | | | | | 540 | | | |
| Glu | Leu | Pro | Tyr | Ser | His | Ile | Asn | Asn | Arg | Asp | Gln | Ile | Ile | Phe |
| | 545 | | | | 550 | | | | | 555 | | | | 560 |
| Val | Gly | Arg | Gly | Tyr | Ala | Ser | Pro | Asp | Leu | Ser | Lys | Leu | Tyr | Lys |
| | | | 565 | | | | | | 570 | | | | | 575 |
| Cys | Pro | Lys | Ala | Met | Lys | Arg | Leu | Val | Ala | Asp | Cys | Val | Lys | Lys |
| | | | 580 | | | | | 585 | | | | | 590 | |
| Lys | Glu | Glu | Arg | Pro | Leu | Phe | Pro | Gln | Ile | Leu | Ser | Ser | Ile | Glu |
| | | 595 | | | | | 600 | | | | | | 605 | |

Leu Gln His Ser Leu Pro Lys Ile Asn Arg Ser Ala Ser Glu Pro Ser
 610 615 620
 Leu His Arg Ala Ala His Thr Glu Asp Ile Asn Ala Cys Thr Leu Thr
 625 630 635 640
 Thr Ser Pro Arg Leu Pro Val Phe
 645

<210> 18
 <211> 480
 <212> PRT
 <213> Homo sapiens

<400> 18
 Met Ser Asp Val Ala Ile Val Lys Glu Gly Trp Leu His Lys Arg Gly
 1 5 10 15
 Glu Tyr Ile Lys Thr Trp Arg Pro Arg Tyr Phe Leu Leu Lys Asn Asp
 20 25 30
 Gly Thr Phe Ile Gly Tyr Lys Glu Arg Pro Gln Asp Val Asp Gln Arg
 35 40 45
 Glu Ala Pro Leu Asn Asn Phe Ser Val Ala Gln Cys Gln Leu Met Lys
 50 55 60
 Thr Glu Arg Pro Arg Pro Asn Thr Phe Ile Ile Arg Cys Leu Gln Trp
 65 70 75 80
 Thr Thr Val Ile Glu Arg Thr Phe His Val Glu Thr Pro Glu Glu Arg
 85 90 95
 Glu Glu Trp Thr Thr Ala Ile Gln Thr Val Ala Asp Gly Leu Lys Lys
 100 105 110
 Gln Glu Glu Glu Glu Met Asp Phe Arg Ser Gly Ser Pro Ser Asp Asn
 115 120 125
 Ser Gly Ala Glu Glu Met Glu Val Ser Leu Ala Lys Pro Lys His Arg
 130 135 140
 Val Thr Met Asn Glu Phe Glu Tyr Leu Lys Leu Leu Gly Lys Gly Thr
 145 150 155 160
 Phe Gly Lys Val Ile Leu Val Lys Glu Lys Ala Thr Gly Arg Tyr Tyr
 165 170 175
 Ala Met Lys Ile Leu Lys Lys Glu Val Ile Val Ala Lys Asp Glu Val
 180 185 190
 Ala His Thr Leu Thr Glu Asn Arg Val Leu Gln Asn Ser Arg His Pro
 195 200 205
 Phe Leu Thr Ala Leu Lys Tyr Ser Phe Gln Thr His Asp Arg Leu Cys
 210 215 220
 Phe Val Met Glu Tyr Ala Asn Gly Gly Glu Leu Phe Phe His Leu Ser
 225 230 235 240
 Arg Glu Arg Val Phe Ser Glu Asp Arg Ala Arg Phe Tyr Gly Ala Glu
 245 250 255
 Ile Val Ser Ala Leu Asp Tyr Leu His Ser Glu Lys Asn Val Val Tyr
 260 265 270
 Arg Asp Leu Lys Leu Glu Asn Leu Met Leu Asp Lys Asp Gly His Ile
 275 280 285
 Lys Ile Thr Asp Phe Gly Leu Cys Lys Glu Gly Ile Lys Asp Gly Ala
 290 295 300
 Thr Met Lys Thr Phe Cys Gly Thr Pro Glu Tyr Leu Ala Pro Glu Val
 305 310 315 320
 Leu Glu Asp Asn Asp Tyr Gly Arg Ala Val Asp Trp Trp Gly Leu Gly
 325 330 335
 Val Val Met Tyr Glu Met Met Cys Gly Arg Leu Pro Phe Tyr Asn Gln
 340 345 350

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Asp His Glu Lys Leu Phe Glu Leu Ile Leu Met Glu Glu Ile Arg Phe
      355                      360                      365
Pro Arg Thr Leu Gly Pro Glu Ala Lys Ser Leu Leu Ser Gly Leu Leu
      370                      375                      380
Lys Lys Asp Pro Lys Gln Arg Leu Gly Gly Gly Ser Glu Asp Ala Lys
385                      390                      395                      400
Glu Ile Met Gln His Arg Phe Phe Ala Gly Ile Val Trp Gln His Val
      405                      410                      415
Tyr Glu Lys Lys Leu Ser Pro Pro Phe Lys Pro Gln Val Thr Ser Glu
      420                      425                      430
Thr Asp Thr Arg Tyr Phe Asp Glu Glu Phe Thr Ala Gln Met Ile Thr
      435                      440                      445
Ile Thr Pro Pro Asp Gln Asp Asp Ser Met Glu Cys Val Asp Ser Glu
      450                      455                      460
Arg Arg Pro His Phe Pro Gln Phe Ser Tyr Ser Ala Ser Ser Thr Ala
465                      470                      475                      480

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<210> 19

<211> 724

<212> PRT

<213> Homo sapiens

<400> 19

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Met Ser Ala Glu Gly Tyr Gln Tyr Arg Ala Leu Tyr Asp Tyr Lys Lys
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Asn Lys Gly Ser Leu Val Ala Leu Gly Phe Ser Asp Gly Gln Glu Ala
      35                      40                      45
Arg Pro Glu Glu Ile Gly Trp Leu Asn Gly Tyr Asn Glu Thr Thr Gly
      50                      55                      60
Glu Arg Gly Asp Phe Pro Gly Thr Tyr Val Glu Tyr Ile Gly Arg Lys
      65                      70                      75                      80
Lys Ile Ser Pro Pro Thr Pro Lys Pro Arg Pro Pro Arg Pro Leu Pro
      85                      90                      95
Val Ala Pro Gly Ser Ser Lys Thr Glu Ala Asp Val Glu Gln Gln Ala
      100                      105                      110
Leu Thr Leu Pro Asp Leu Ala Glu Gln Phe Ala Pro Pro Asp Ile Ala
      115                      120                      125
Pro Pro Leu Leu Ile Lys Leu Val Glu Ala Ile Glu Lys Lys Gly Leu
      130                      135                      140
Glu Cys Ser Thr Leu Tyr Arg Thr Gln Ser Ser Ser Asn Leu Ala Glu
145                      150                      155                      160
Leu Arg Gln Leu Leu Asp Cys Asp Thr Pro Ser Val Asp Leu Glu Met
      165                      170                      175
Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg Tyr Leu Leu Asp
      180                      185                      190
Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser Glu Met Ile Ser
      195                      200                      205
Leu Ala Pro Glu Val Gln Ser Ser Glu Glu Tyr Ile Gln Leu Leu Lys
      210                      215                      220
Lys Leu Ile Arg Ser Pro Ser Ile Pro His Gln Tyr Trp Leu Thr Leu
225                      230                      235                      240
Gln Tyr Leu Leu Lys His Phe Phe Lys Leu Ser Gln Thr Ser Ser Lys
      245                      250                      255
Asn Leu Leu Asn Ala Arg Val Leu Ser Glu Ile Phe Ser Pro Met Leu
      260                      265                      270

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| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Arg | Phe | Ser | Ala | Ala | Ser | Ser | Asp | Asn | Thr | Glu | Asn | Leu | Ile | Lys |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Val | Ile | Glu | Ile | Leu | Ile | Ser | Thr | Glu | Trp | Asn | Glu | Arg | Gln | Pro | Ala |
| | | 290 | | | | 295 | | | | | 300 | | | | |
| Pro | Ala | Leu | Pro | Pro | Lys | Pro | Pro | Lys | Pro | Thr | Thr | Val | Ala | Asn | Asn |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Gly | Met | Asn | Asn | Asn | Met | Ser | Leu | Gln | Asn | Ala | Glu | Trp | Tyr | Trp | Gly |
| | | | | 325 | | | | 330 | | | | | 335 | | |
| Asp | Ile | Ser | Arg | Glu | Glu | Val | Asn | Glu | Lys | Leu | Arg | Asp | Thr | Ala | Asp |
| | | | 340 | | | | | 345 | | | | 350 | | | |
| Gly | Thr | Phe | Leu | Val | Arg | Asp | Ala | Ser | Thr | Lys | Met | His | Gly | Asp | Tyr |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Thr | Leu | Thr | Leu | Arg | Lys | Gly | Gly | Asn | Asn | Lys | Leu | Ile | Lys | Ile | Phe |
| | | 370 | | | | 375 | | | | | 380 | | | | |
| His | Arg | Asp | Gly | Lys | Tyr | Gly | Phe | Ser | Asp | Pro | Leu | Thr | Phe | Ser | Ser |
| 385 | | | | 390 | | | | | | 395 | | | | | 400 |
| Val | Val | Glu | Leu | Ile | Asn | His | Tyr | Arg | Asn | Glu | Ser | Leu | Ala | Gln | Tyr |
| | | | | 405 | | | | | 410 | | | | | 415 | |
| Asn | Pro | Lys | Leu | Asp | Val | Lys | Leu | Leu | Tyr | Pro | Val | Ser | Lys | Tyr | Gln |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Gln | Asp | Gln | Val | Val | Lys | Glu | Asp | Asn | Ile | Glu | Ala | Val | Gly | Lys | Lys |
| | | 435 | | | | | 440 | | | | | 445 | | | |
| Leu | His | Glu | Tyr | Asn | Thr | Gln | Phe | Gln | Glu | Lys | Ser | Arg | Glu | Tyr | Asp |
| | | 450 | | | | 455 | | | | | 460 | | | | |
| Arg | Leu | Tyr | Glu | Glu | Tyr | Thr | Arg | Thr | Ser | Gln | Glu | Ile | Gln | Met | Lys |
| 465 | | | | 470 | | | | | | 475 | | | | | 480 |
| Arg | Thr | Ala | Ile | Glu | Ala | Phe | Asn | Glu | Thr | Ile | Lys | Ile | Phe | Glu | Glu |
| | | | | 485 | | | | 490 | | | | | | 495 | |
| Gln | Cys | Gln | Thr | Gln | Glu | Arg | Tyr | Ser | Lys | Glu | Tyr | Ile | Glu | Lys | Phe |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Lys | Arg | Glu | Gly | Asn | Glu | Lys | Glu | Ile | Gln | Arg | Ile | Met | His | Asn | Tyr |
| | | 515 | | | | | 520 | | | | | 525 | | | |
| Asp | Lys | Leu | Lys | Ser | Arg | Ile | Ser | Glu | Ile | Ile | Asp | Ser | Arg | Arg | Arg |
| | | 530 | | | | 535 | | | | | 540 | | | | |
| Leu | Glu | Glu | Asp | Leu | Lys | Lys | Gln | Ala | Ala | Glu | Tyr | Arg | Glu | Ile | Asp |
| 545 | | | | 550 | | | | | | 555 | | | | | 560 |
| Lys | Arg | Met | Asn | Ser | Ile | Lys | Pro | Asp | Leu | Ile | Gln | Leu | Arg | Lys | Thr |
| | | | | 565 | | | | 570 | | | | | | 575 | |
| Arg | Asp | Gln | Tyr | Leu | Met | Trp | Leu | Thr | Gln | Lys | Gly | Val | Arg | Gln | Lys |
| | | | 580 | | | | | 585 | | | | | 590 | | |
| Lys | Leu | Asn | Glu | Trp | Leu | Gly | Asn | Glu | Asn | Thr | Glu | Asp | Gln | Tyr | Ser |
| | | 595 | | | | 600 | | | | | | 605 | | | |
| Leu | Val | Glu | Asp | Asp | Glu | Asp | Leu | Pro | His | His | Asp | Glu | Lys | Thr | Trp |
| | | 610 | | | | 615 | | | | | 620 | | | | |
| Asn | Val | Gly | S | | | | | | | | | | | | |

<210> 20
 <211> 3056
 <212> PRT
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<400> 20
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 His Asp Arg Ala Thr Glu Arg Lys Lys Glu Val Glu Lys Phe Lys Arg
 20 25 30
 Leu Ile Arg Asp Pro Glu Thr Ile Lys His Leu Asp Arg His Ser Asp
 35 40 45
 Ser Lys Gln Gly Lys Tyr Leu Asn Trp Asp Ala Val Phe Arg Phe Leu
 50 55 60
 Gln Lys Tyr Ile Gln Lys Glu Thr Glu Cys Leu Arg Ile Ala Lys Pro
 65 70 75 80
 Asn Val Ser Ala Ser Thr Gln Ala Ser Arg Gln Lys Lys Met Gln Glu
 85 90 95
 Ile Ser Ser Leu Val Lys Tyr Phe Ile Lys Cys Ala Asn Arg Arg Ala
 100 105 110
 Pro Arg Leu Lys Cys Gln Glu Leu Leu Asn Tyr Ile Met Asp Thr Val
 115 120 125
 Lys Asp Ser Ser Asn Gly Ala Ile Tyr Gly Ala Asp Cys Ser Asn Ile
 130 135 140
 Leu Leu Lys Asp Ile Leu Ser Val Arg Lys Tyr Trp Cys Glu Ile Ser
 145 150 155 160
 Gln Gln Gln Trp Leu Glu Leu Phe Ser Val Tyr Phe Arg Leu Tyr Leu
 165 170 175
 Lys Pro Ser Gln Asp Val His Arg Val Leu Val Ala Arg Ile Ile His
 180 185 190
 Ala Val Thr Lys Gly Cys Cys Ser Gln Thr Asp Gly Leu Asn Ser Lys
 195 200 205
 Phe Leu Asp Phe Phe Ser Lys Ala Ile Gln Cys Ala Arg Gln Glu Lys
 210 215 220
 Ser Ser Ser Gly Leu Asn His Ile Leu Ala Ala Leu Thr Ile Phe Leu
 225 230 235 240
 Lys Thr Leu Ala Val Asn Phe Arg Ile Arg Val Cys Glu Leu Gly Asp
 245 250 255
 Glu Ile Leu Pro Thr Leu Leu Tyr Ile Trp Thr Gln His Arg Leu Asn
 260 265 270
 Asp Ser Leu Lys Glu Val Ile Ile Glu Leu Phe Gln Leu Gln Ile Tyr
 275 280 285
 Ile His His Pro Lys Gly Ala Lys Thr Gln Glu Lys Gly Ala Tyr Glu
 290 295 300
 Ser Thr Lys Trp Arg Ser Ile Leu Tyr Asn Leu Tyr Asp Leu Leu Val
 305 310 315 320
 Asn Glu Ile Ser His Ile Gly Ser Arg Gly Lys Tyr Ser Ser Gly Phe
 325 330 335
 Arg Asn Ile Ala Val Lys Glu Asn Leu Ile Glu Leu Met Ala Asp Ile
 340 345 350
 Cys His Gln Val Phe Asn Glu Asp Thr Arg Ser Leu Glu Ile Ser Gln
 355 360 365
 Ser Tyr Thr Thr Thr Gln Arg Glu Ser Ser Asp Tyr Ser Val Pro Cys
 370 375 380
 Lys Arg Lys Lys Ile Glu Leu Gly Trp Glu Val Ile Lys Asp His Leu

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 385 | | | | | 390 | | | | | 395 | | | | 400 | |
| Gln | Lys | Ser | Gln | Asn | Asp | Phe | Asp | Leu | Val | Pro | Trp | Leu | Gln | Ile | Ala |
| | | | | 405 | | | | | 410 | | | | | 415 | |
| Thr | Gln | Leu | Ile | Ser | Lys | Tyr | Pro | Ala | Ser | Leu | Pro | Asn | Cys | Glu | Leu |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Ser | Pro | Leu | Leu | Met | Ile | Leu | Ser | Gln | Leu | Leu | Pro | Gln | Gln | Arg | His |
| | | 435 | | | | | 440 | | | | | 445 | | | |
| Gly | Glu | Arg | Thr | Pro | Tyr | Val | Leu | Arg | Cys | Leu | Thr | Glu | Val | Ala | Leu |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Cys | Gln | Asp | Lys | Arg | Ser | Asn | Leu | Glu | Ser | Ser | Gln | Lys | Ser | Asp | Leu |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Leu | Lys | Leu | Trp | Asn | Lys | Ile | Trp | Cys | Ile | Thr | Phe | Arg | Gly | Ile | Ser |
| | | | | 485 | | | | | 490 | | | | | 495 | |
| Ser | Glu | Gln | Ile | Gln | Ala | Glu | Asn | Phe | Gly | Leu | Leu | Gly | Ala | Ile | Ile |
| | | 500 | | | | | | 505 | | | | | 510 | | |
| Gln | Gly | Ser | Leu | Val | Glu | Val | Asp | Arg | Glu | Phe | Trp | Lys | Leu | Phe | Thr |
| | | 515 | | | | | 520 | | | | | 525 | | | |
| Gly | Ser | Ala | Cys | Arg | Pro | Ser | Cys | Pro | Ala | Val | Cys | Cys | Leu | Thr | Leu |
| | 530 | | | | | 535 | | | | | 540 | | | | |
| Ala | Leu | Thr | Thr | Ser | Ile | Val | Pro | Gly | Ala | Val | Lys | Met | Gly | Ile | Glu |
| 545 | | | | 550 | | | | | | 555 | | | | | 560 |
| Gln | Asn | Met | Cys | Glu | Val | Asn | Arg | Ser | Phe | Ser | Leu | Lys | Glu | Ser | Ile |
| | | | 565 | | | | | | 570 | | | | | 575 | |
| Met | Lys | Trp | Leu | Phe | Tyr | Gln | Leu | Glu | Gly | Asp | Leu | Glu | Asn | Ser | |
| | | 580 | | | | | 585 | | | | | 590 | | | |
| Thr | Glu | Val | Pro | Pro | Ile | Leu | His | Ser | Asn | Phe | Pro | His | Leu | Val | Leu |
| | | 595 | | | | | 600 | | | | | 605 | | | |
| Glu | Lys | Ile | Leu | Val | Ser | Leu | Thr | Met | Lys | Asn | Cys | Lys | Ala | Ala | Met |
| | 610 | | | | | 615 | | | | | 620 | | | | |
| Asn | Phe | Phe | Gln | Ser | Val | Pro | Glu | Cys | Glu | His | His | Gln | Lys | Asp | Lys |
| 625 | | | | 630 | | | | | | 635 | | | | | 640 |
| Glu | Glu | Leu | Ser | Phe | Ser | Glu | Val | Glu | Glu | Leu | Phe | Leu | Gln | Thr | Thr |
| | | | 645 | | | | | | 650 | | | | | 655 | |
| Phe | Asp | Lys | Met | Asp | Phe | Leu | Thr | Ile | Val | Arg | Glu | Cys | Gly | Ile | Glu |
| | | 660 | | | | | | 665 | | | | | 670 | | |
| Lys | His | Gln | Ser | Ser | Ile | Gly | Phe | Ser | Val | His | Gln | Asn | Leu | Lys | Glu |
| | 675 | | | | | 680 | | | | | 685 | | | | |
| Ser | Leu | Asp | Arg | Cys | Leu | Leu | Gly | Leu | Ser | Glu | Gln | Leu | Leu | Asn | Asn |
| | 690 | | | | 695 | | | | | | 700 | | | | |
| Tyr | Ser | Ser | Glu | Ile | Thr | Asn | Ser | Glu | Thr | Leu | Val | Arg | Cys | Ser | Arg |
| 705 | | | | 710 | | | | | | 715 | | | | | 720 |
| Leu | Leu | Val | Gly | Val | Leu | Gly | Cys | Tyr | Cys | Tyr | Met | Gly | Val | Ile | Ala |
| | | | 725 | | | | | | 730 | | | | | 735 | |
| Glu | Glu | Glu | Ala | Tyr | Lys | Ser | Glu | Leu | Phe | Gln | Lys | Ala | Asn | Ser | Leu |
| | | | 740 | | | | | 745 | | | | | 750 | | |
| Met | Gln | Cys | Ala | Gly | Glu | Ser | Ile | Thr | Leu | Phe | Lys | Asn | Lys | Thr | Asn |
| | | 755 | | | | | 760 | | | | | 765 | | | |
| Glu | Glu | Phe | Arg | Ile | Gly | Ser | Leu | Arg | Asn | Met | Met | Gln | Leu | Cys | Thr |
| | 770 | | | | 775 | | | | | | 780 | | | | |
| Arg | Cys | Leu | Ser | Asn | Cys | Thr | Lys | Lys | Ser | Pro | Asn | Lys | Ile | Ala | Ser |
| 785 | | | | 790 | | | | | | 795 | | | | | 800 |
| Gly | Phe | Phe | Leu | Arg | Leu | Leu | Thr | Ser | Lys | Leu | Met | Asn | Asp | Ile | Ala |
| | | | 805 | | | | | | 810 | | | | | 815 | |
| Asp | Ile | Cys | Lys | Ser | Leu | Ala | Ser | Phe | Ile | Lys | Lys | Pro | Phe | Asp | Arg |
| | | 820 | | | | | | 825 | | | | | 830 | | |
| Gly | Glu | Val | Glu | Ser | Met | Glu | Asp | Asp | Thr | Asn | Gly | Asn | Leu | Met | Glu |
| | | 835 | | | | | 840 | | | | | 845 | | | |

Val Glu Asp Gln Ser Ser Met Asn Leu Phe Asn Asp Tyr Pro Asp Ser
 850 855 860
 Ser Val Ser Asp Ala Asn Glu Pro Gly Glu Ser Gln Ser Thr Ile Gly
 865 870 875 880
 Ala Ile Asn Pro Leu Ala Glu Glu Tyr Leu Ser Lys Gln Asp Leu Leu
 885 890 895
 Phe Leu Asp Met Leu Lys Phe Leu Cys Leu Cys Val Thr Thr Ala Gln
 900 905 910
 Thr Asn Thr Val Ser Phe Arg Ala Ala Asp Ile Arg Arg Lys Leu Leu
 915 920 925
 Met Leu Ile Asp Ser Ser Thr Leu Glu Pro Thr Lys Ser Leu His Leu
 930 935 940
 His Met Tyr Leu Met Leu Leu Lys Glu Leu Pro Gly Glu Glu Tyr Pro
 945 950 955 960
 Leu Pro Met Glu Asp Val Leu Glu Leu Leu Lys Pro Leu Ser Asn Val
 965 970 975
 Cys Ser Leu Tyr Arg Arg Asp Gln Asp Val Cys Lys Thr Ile Leu Asn
 980 985 990
 His Val Leu His Val Val Lys Asn Leu Gly Gln Ser Asn Met Asp Ser
 995 1000 1005
 Glu Asn Thr Arg Asp Ala Gln Gly Gln Phe Leu Thr Val Ile Gly Ala
 1010 1015 1020
 Phe Trp His Leu Thr Lys Glu Arg Lys Tyr Ile Phe Ser Val Arg Met
 1025 1030 1035 1040
 Ala Leu Val Asn Cys Leu Lys Thr Leu Leu Glu Ala Asp Pro Tyr Ser
 1045 1050 1055
 Lys Trp Ala Ile Leu Asn Val Met Gly Lys Asp Phe Pro Val Asn Glu
 1060 1065 1070
 Val Phe Thr Gln Phe Leu Ala Asp Asn His His Gln Val Arg Met Leu
 1075 1080 1085
 Ala Ala Glu Ser Ile Asn Arg Leu Phe Gln Asp Thr Lys Gly Asp Ser
 1090 1095 1100
 Ser Arg Leu Leu Lys Ala Leu Pro Leu Lys Leu Gln Gln Thr Ala Phe
 1105 1110 1115 1120
 Glu Asn Ala Tyr Leu Lys Ala Gln Glu Gly Met Arg Glu Met Ser His
 1125 1130 1135
 Ser Ala Glu Asn Pro Glu Thr Leu Asp Glu Ile Tyr Asn Arg Lys Ser
 1140 1145 1150
 Val Leu Leu Thr Leu Ile Ala Val Leu Ser Cys Ser Pro Ile Cys
 1155 1160 1165
 Glu Lys Gln Ala Leu Phe Ala Leu Cys Lys Ser Val Lys Glu Asn Gly
 1170 1175 1180
 Leu Glu Pro His Leu Val Lys Lys Val Leu Glu Lys Val Ser Glu Thr
 1185 1190 1195 1200
 Phe Gly Tyr Arg Arg Leu Glu Asp Phe Met Ala Ser His Leu Asp Tyr
 1205 1210 1215
 Leu Val Leu Glu Trp Leu Asn Leu Gln Asp Thr Glu Tyr Asn Leu Ser
 1220 1225 1230
 Ser Phe Pro Phe Ile Leu Leu Asn Tyr Thr Asn Ile Glu Asp Phe Tyr
 1235 1240 1245
 Arg Ser Cys Tyr Lys Val Leu Ile Pro His Leu Val Ile Arg Ser His
 1250 1255 1260
 Phe Asp Glu Val Lys Ser Ile Ala Asn Gln Ile Gln Glu Asp Trp Lys
 1265 1270 1275 1280
 Ser Leu Leu Thr Asp Cys Phe Pro Lys Ile Leu Val Asn Ile Leu Pro
 1285 1290 1295
 Tyr Phe Ala Tyr Glu Gly Thr Arg Asp Ser Gly Met Ala Gln Gln Arg

1300 1305 1310
 Glu Thr Ala Thr Lys Val Tyr Asp Met Leu Lys Ser Glu Asn Leu Leu
 1315 1320 1325
 Gly Lys Gln Ile Asp His Leu Phe Ile Ser Asn Leu Pro Glu Ile Val
 1330 1335 1340
 Val Glu Leu Leu Met Thr Leu His Glu Pro Ala Asn Ser Ser Ala Ser
 1345 1350 1355 1360
 Gln Ser Thr Asp Leu Cys Asp Phe Ser Gly Asp Leu Asp Pro Ala Pro
 1365 1370 1375
 Asn Pro Pro His Phe Pro Ser His Val Ile Lys Ala Thr Phe Ala Tyr
 1380 1385 1390
 Ile Ser Asn Cys His Lys Thr Lys Leu Lys Ser Ile Leu Glu Ile Leu
 1395 1400 1405
 Ser Lys Ser Pro Asp Ser Tyr Gln Lys Ile Leu Leu Ala Ile Cys Glu
 1410 1415 1420
 Gln Ala Ala Glu Thr Asn Asn Val Tyr Lys Lys His Arg Ile Leu Lys
 1425 1430 1435 1440
 Ile Tyr His Leu Phe Val Ser Leu Leu Lys Asp Ile Lys Ser Gly
 1445 1450 1455
 Leu Gly Gly Ala Trp Ala Phe Val Leu Arg Asp Val Ile Tyr Thr Leu
 1460 1465 1470
 Ile His Tyr Ile Asn Gln Arg Pro Ser Cys Ile Met Asp Val Ser Leu
 1475 1480 1485
 Arg Ser Phe Ser Leu Cys Cys Asp Leu Leu Ser Gln Val Cys Gln Thr
 1490 1495 1500
 Ala Val Thr Tyr Cys Lys Asp Ala Leu Glu Asn His Leu His Val Ile
 1505 1510 1515 1520
 Val Gly Thr Leu Ile Pro Leu Val Tyr Glu Gln Val Glu Val Gln Lys
 1525 1530 1535
 Gln Val Leu Asp Leu Leu Lys Tyr Leu Val Ile Asp Asn Lys Asp Asn
 1540 1545 1550
 Glu Asn Leu Tyr Ile Thr Ile Lys Leu Leu Asp Pro Phe Pro Asp His
 1555 1560 1565
 Val Val Phe Lys Asp Leu Arg Ile Thr Gln Gln Lys Ile Lys Tyr Ser
 1570 1575 1580
 Arg Gly Pro Phe Ser Leu Leu Glu Glu Ile Asn His Phe Leu Ser Val
 1585 1590 1595 1600
 Ser Val Tyr Asp Ala Leu Pro Leu Thr Arg Leu Glu Gly Leu Lys Asp
 1605 1610 1615
 Leu Arg Arg Gln Leu Glu Leu His Lys Asp Gln Met Val Asp Ile Met
 1620 1625 1630
 Arg Ala Ser Gln Asp Asn Pro Gln Asp Gly Ile Met Val Lys Leu Val
 1635 1640 1645
 Val Asn Leu Leu Gln Leu Ser Lys Met Ala Ile Asn His Thr Gly Glu
 1650 1655 1660
 Lys Glu Val Leu Glu Ala Val Gly Ser Cys Leu Gly Glu Val Gly Pro
 1665 1670 1675 1680
 Ile Asp Phe Ser Thr Ile Ala Ile Gln His Ser Lys Asp Ala Ser Tyr
 1685 1690 1695
 Thr Lys Ala Leu Lys Leu Phe Glu Asp Lys Glu Leu Gln Trp Thr Phe
 1700 1705 1710
 Ile Met Leu Thr Tyr Leu Asn Asn Thr Leu Val Glu Asp Cys Val Lys
 1715 1720 1725
 Val Arg Ser Ala Ala Val Thr Cys Leu Lys Asn Ile Leu Ala Thr Lys
 1730 1735 1740
 Thr Gly His Ser Phe Trp Glu Ile Tyr Lys Met Thr Thr Asp Pro Met
 1745 1750 1755 1760

Leu Ala Tyr Leu Gln Pro Phe Arg Thr Ser Arg Lys Lys Phe Leu Glu
 1765 1770 1775
 Val Pro Arg Phe Asp Lys Glu Asn Pro Phe Glu Gly Leu Asp Asp Ile
 1780 1785 1790
 Asn Leu Trp Ile Pro Leu Ser Glu Asn His Asp Ile Trp Ile Lys Thr
 1795 1800 1805
 Leu Thr Cys Ala Phe Leu Asp Ser Gly Gly Thr Lys Cys Glu Ile Leu
 1810 1815 1820
 Gln Leu Leu Lys Pro Met Cys Glu Val Lys Thr Asp Phe Cys Gln Thr
 1825 1830 1835 1840
 Val Leu Pro Tyr Leu Ile His Asp Ile Leu Leu Gln Asp Thr Asn Glu
 1845 1850 1855
 Ser Trp Arg Asn Leu Leu Ser Thr His Val Gln Gly Phe Phe Thr Ser
 1860 1865 1870
 Cys Leu Arg His Phe Ser Gln Thr Ser Arg Ser Thr Thr Pro Ala Asn
 1875 1880 1885
 Leu Asp Ser Glu Ser Glu His Phe Phe Arg Cys Cys Leu Asp Lys Lys
 1890 1895 1900
 Ser Gln Arg Thr Met Leu Ala Val Val Asp Tyr Met Arg Arg Gln Lys
 1905 1910 1915 1920
 Arg Pro Ser Ser Gly Thr Ile Phe Asn Asp Ala Phe Trp Leu Asp Leu
 1925 1930 1935
 Asn Tyr Leu Glu Val Ala Lys Val Ala Gln Ser Cys Ala Ala His Phe
 1940 1945 1950
 Thr Ala Leu Leu Tyr Ala Glu Ile Tyr Ala Asp Lys Lys Ser Met Asp
 1955 1960 1965
 Asp Gln Glu Lys Arg Ser Leu Ala Phe Glu Glu Gly Ser Gln Ser Thr
 1970 1975 1980
 Thr Ile Ser Ser Leu Ser Glu Lys Ser Lys Glu Glu Thr Gly Ile Ser
 1985 1990 1995 2000
 Leu Gln Asp Leu Leu Leu Glu Ile Tyr Arg Ser Ile Gly Glu Pro Asp
 2005 2010 2015
 Ser Leu Tyr Gly Cys Gly Gly Gly Lys Met Leu Gln Pro Ile Thr Arg
 2020 2025 2030
 Leu Arg Thr Tyr Glu His Glu Ala Met Trp Gly Lys Ala Leu Val Thr
 2035 2040 2045
 Tyr Asp Leu Glu Thr Ala Ile Pro Ser Ser Thr Arg Gln Ala Gly Ile
 2050 2055 2060
 Ile Gln Ala Leu Gln Asn Leu Gly Leu Cys His Ile Leu Ser Val Tyr
 2065 2070 2075 2080
 Leu Lys Gly Leu Asp Tyr Glu Asn Lys Asp Trp Cys Pro Glu Leu Glu
 2085 2090 2095
 Glu Leu His Tyr Gln Ala Ala Trp Arg Asn Met Gln Trp Asp His Cys
 2100 2105 2110
 Thr Ser Val Ser Lys Glu Val Glu Gly Thr Ser Tyr His Glu Ser Leu
 2115 2120 2125
 Tyr Asn Ala Leu Gln Ser Leu Arg Asp Arg Glu Phe Ser Thr Phe Tyr
 2130 2135 2140
 Glu Ser Leu Lys Tyr Ala Arg Val Lys Glu Val Glu Glu Met Cys Lys
 2145 2150 2155 2160
 Arg Ser Leu Glu Ser Val Tyr Ser Leu Tyr Pro Thr Leu Ser Arg Leu
 2165 2170 2175
 Gln Ala Ile Gly Glu Leu Glu Ser Ile Gly Glu Leu Phe Ser Arg Ser
 2180 2185 2190
 Val Thr His Arg Gln Leu Ser Glu Val Tyr Ile Lys Trp Gln Lys His
 2195 2200 2205
 Ser Gln Leu Leu Lys Asp Ser Asp Phe Ser Phe Gln Glu Pro Ile Met

| | | |
|---|------|------|
| 2210 | 2215 | 2220 |
| Ala Leu Arg Thr Val Ile Leu Glu Ile Leu Met Glu Lys Glu Met Asp | | |
| 2225 | 2230 | 2235 |
| Asn Ser Gln Arg Glu Cys Ile Lys Asp Ile Leu Thr Lys His Leu Val | | 2240 |
| | 2245 | 2250 |
| Glu Leu Ser Ile Leu Ala Arg Thr Phe Lys Asn Thr Gln Leu Pro Glu | | 2255 |
| | 2260 | 2265 |
| Arg Ala Ile Phe Gln Ile Lys Gln Tyr Asn Ser Val Ser Cys Gly Val | | 2270 |
| | 2275 | 2280 |
| Ser Glu Trp Gln Leu Glu Glu Ala Gln Val Phe Trp Ala Lys Lys Glu | | 2285 |
| | 2290 | 2295 |
| Gln Ser Leu Ala Leu Ser Ile Leu Lys Gln Met Ile Lys Lys Leu Asp | | 2300 |
| 2305 | 2310 | 2315 |
| Ala Ser Cys Ala Ala Asn Asn Pro Ser Leu Lys Leu Thr Tyr Thr Glu | | 2320 |
| | 2325 | 2330 |
| Cys Leu Arg Val Cys Gly Asn Trp Leu Ala Glu Thr Cys Leu Glu Asn | | 2335 |
| | 2340 | 2345 |
| Pro Ala Val Ile Met Gln Thr Tyr Leu Glu Lys Ala Val Glu Val Ala | | 2350 |
| | 2355 | 2360 |
| Gly Asn Tyr Asp Gly Glu Ser Ser Asp Glu Leu Arg Asn Gly Lys Met | | 2365 |
| | 2370 | 2375 |
| Lys Ala Phe Leu Ser Leu Ala Arg Phe Ser Asp Thr Gln Tyr Gln Arg | | 2380 |
| 2385 | 2390 | 2395 |
| Ile Glu Asn Tyr Met Lys Ser Ser Glu Phe Glu Asn Lys Gln Ala Leu | | 2400 |
| | 2405 | 2410 |
| Leu Lys Arg Ala Lys Glu Glu Val Gly Leu Leu Arg Glu His Lys Ile | | 2415 |
| | 2420 | 2425 |
| Gln Thr Asn Arg Tyr Thr Val Lys Val Gln Arg Glu Leu Glu Leu Asp | | 2430 |
| | 2435 | 2440 |
| Glu Leu Ala Leu Arg Ala Leu Lys Glu Asp Arg Lys Arg Phe Leu Cys | | 2445 |
| | 2450 | 2455 |
| Lys Ala Val Glu Asn Tyr Ile Asn Cys Leu Leu Ser Gly Glu Glu His | | 2460 |
| 2465 | 2470 | 2475 |
| Asp Met Trp Val Phe Arg Leu Cys Ser Leu Trp Leu Glu Asn Ser Gly | | 2480 |
| | 2485 | 2490 |
| Val Ser Glu Val Asn Gly Met Met Lys Arg Asp Gly Met Lys Ile Pro | | 2495 |
| | 2500 | 2505 |
| Thr Tyr Lys Phe Leu Pro Leu Met Tyr Gln Leu Ala Ala Arg Met Gly | | 2510 |
| | 2515 | 2520 |
| Thr Lys Met Met Gly Gly Leu Gly Phe His Glu Val Leu Asn Asn Leu | | 2525 |
| | 2530 | 2535 |
| Ile Ser Arg Ile Ser Met Asp His Pro His His Thr Leu Phe Ile Ile | | 2540 |
| 2545 | 2550 | 2555 |
| Leu Ala Leu Ala Asn Ala Asn Arg Asp Glu Phe Leu Thr Lys Pro Glu | | 2560 |
| | 2565 | 2570 |
| Val Ala Arg Arg Ser Arg Ile Thr Lys Asn Val Pro Lys Gln Ser Ser | | 2575 |
| | 2580 | 2585 |
| Gln Leu Asp Glu Asp Arg Thr Glu Ala Ala Asn Arg Ile Ile Cys Thr | | 2590 |
| | 2595 | 2600 |
| Ile Arg Ser Arg Arg Pro Gln Met Val Arg Ser Val Glu Ala Leu Cys | | 2605 |
| | 2610 | 2615 |
| Asp Ala Tyr Ile Ile Leu Ala Asn Leu Asp Ala Thr Gln Trp Lys Thr | | 2620 |
| 2625 | 2630 | 2635 |
| Gln Arg Lys Gly Ile Asn Ile Pro Ala Asp Gln Pro Ile Thr Lys Leu | | 2640 |
| | 2645 | 2650 |
| Lys Asn Leu Glu Asp Val Val Val Pro Thr Met Glu Ile Lys Val Asp | | 2655 |
| | 2660 | 2665 |
| | | 2670 |

His Thr Gly Glu Tyr Gly Asn Leu Val Thr Ile Gln Ser Phe Lys Ala
 2675 2680 2685
 Glu Phe Arg Leu Ala Gly Gly Val Asn Leu Pro Lys Ile Ile Asp Cys
 2690 2695 2700
 Val Gly Ser Asp Gly Lys Glu Arg Arg Gln Leu Val Lys Gly Arg Asp
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 Asp Leu Arg Gln Asp Ala Val Met Gln Gln Val Phe Gln Met Cys Asn
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 Thr Leu Leu Gln Arg Asn Thr Glu Thr Arg Lys Arg Lys Leu Thr Ile
 2740 2745 2750
 Cys Thr Tyr Lys Val Val Pro Leu Ser Gln Arg Ser Gly Val Leu Glu
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 Trp Cys Thr Gly Thr Val Pro Ile Gly Glu Phe Leu Val Asn Asn Glu
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 Asp Gly Ala His Lys Arg Tyr Arg Pro Asn Asp Phe Ser Ala Phe Gln
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 Cys Gln Lys Lys Met Met Glu Val Gln Lys Lys Ser Phe Glu Glu Lys
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 Tyr Glu Val Phe Met Asp Val Cys Gln Asn Phe Gln Pro Val Phe Arg
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 Arg Leu Ala Tyr Thr Arg Ser Val Ala Thr Ser Ser Ile Val Gly Tyr
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 Ile Leu Gly Leu Gly Asp Arg His Val Gln Asn Ile Leu Ile Asn Glu
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 Gln Ser Ala Glu Leu Val His Ile Asp Leu Gly Val Ala Phe Glu Gln
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 Arg Cys Cys Glu Lys Thr Met Glu Val Met Arg Asn Ser Gln Glu Thr
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 Thr Met Asn Pro Leu Lys Ala Leu Tyr Leu Gln Gln Arg Pro Glu Asp
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 Glu Thr Glu Leu His Pro Thr Leu Asn Ala Asp Asp Gln Glu Cys Lys
 2980 2985 2990
 Arg Asn Leu Ser Asp Ile Asp Gln Ser Phe Asp Lys Val Ala Glu Arg
 2995 3000 3005
 Val Leu Met Arg Leu Gln Glu Lys Leu Lys Gly Val Glu Glu Gly Thr
 3010 3015 3020
 Val Leu Ser Val Gly Gly Gln Val Asn Leu Leu Ile Gln Gln Ala Ile
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<212> PRT

<213> Homo sapiens

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| Lys | Tyr | Asn | Phe | His | Gly | Thr | Ala | Glu | Gln | Asp | Leu | Pro | Phe | Cys | Lys |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Gly | Asp | Val | Leu | Thr | Ile | Val | Ala | Val | Thr | Lys | Asp | Pro | Asn | Trp | Tyr |
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| Lys | Ala | Lys | Asn | Lys | Val | Gly | Arg | Glu | Gly | Ile | Ile | Pro | Ala | Asn | Tyr |
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| Val | Gln | Lys | Arg | Glu | Gly | Val | Lys | Ala | Gly | Thr | Lys | Leu | Ser | Leu | Met |
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| Pro | Trp | Phe | His | Gly | Lys | Ile | Thr | Arg | Glu | Gln | Ala | Glu | Arg | Leu | Leu |
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| Tyr | Pro | Pro | Glu | Thr | Gly | Leu | Phe | Leu | Val | Arg | Glu | Ser | Thr | Asn | Tyr |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Pro | Gly | Asp | Tyr | Thr | Leu | Cys | Val | Ser | Cys | Asp | Gly | Lys | Val | Glu | His |
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| Tyr | Arg | Ile | Met | Tyr | His | Ala | Ser | Lys | Leu | Ser | Ile | Asp | Glu | Glu | Val |
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| Tyr | Phe | Glu | Asn | Leu | Met | Gln | Leu | Val | Glu | His | Tyr | Thr | Ser | Asp | Ala |
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| Asp | Gly | Leu | Cys | Thr | Arg | Leu | Ile | Lys | Pro | Lys | Val | Met | Glu | Gly | Thr |
| | | | | 165 | | | | | 170 | | | | | 175 | |
| Val | Ala | Ala | Gln | Asp | Glu | Phe | Tyr | Arg | Ser | Gly | Trp | Ala | Leu | Asn | Met |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Lys | Glu | Leu | Lys | Leu | Leu | Gln | Thr | Ile | Gly | Lys | Gly | Glu | Phe | Gly | Asp |
| | | 195 | | | | 200 | | | | | | 205 | | | |
| Val | Met | Leu | Gly | Asp | Tyr | Arg | Gly | Asn | Lys | Val | Ala | Val | Lys | Cys | Ile |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Lys | Asn | Asp | Ala | Thr | Ala | Gln | Ala | Phe | Leu | Ala | Glu | Ala | Ser | Val | Met |
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| Thr | Gln | Leu | Arg | His | Ser | Asn | Leu | Val | Gln | Leu | Leu | Gly | Val | Ile | Val |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Glu | Glu | Lys | Gly | Gly | Leu | Tyr | Ile | Val | Thr | Glu | Tyr | Met | Ala | Lys | Gly |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Ser | Leu | Val | Asp | Tyr | Leu | Arg | Ser | Arg | Gly | Arg | Ser | Val | Leu | Gly | Gly |
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| Asp | Cys | Leu | Leu | Lys | Phe | Ser | Leu | Asp | Val | Cys | Glu | Ala | Met | Glu | Tyr |
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| Leu | Glu | Gly | Asn | Asn | Phe | Val | His | Arg | Asp | Leu | Ala | Ala | Arg | Asn | Val |
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| Leu | Val | Ser | Glu | Asp | Asn | Val | Ala | Lys | Val | Ser | Asp | Phe | Gly | Leu | Thr |
| | | | | 325 | | | | | 330 | | | | | 335 | |
| Lys | Glu | Ala | Ser | Ser | Thr | Gln | Asp | Thr | Gly | Lys | Leu | Pro | Val | Lys | Trp |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Thr | Ala | Pro | Glu | Ala | Leu | Arg | Glu | Lys | Lys | Phe | Ser | Thr | Lys | Ser | Asp |
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| Val | Trp | Ser | Phe | Gly | Ile | | | | | | | | | | |

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 <213> Homo sapiens

<400> 22

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| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Leu | Glu | Ala | Pro | Glu | Pro | Gly | Val | Glu | Val | Ile | Phe | Tyr | Leu | Ser | Asp |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Arg | Glu | Pro | Leu | Arg | Leu | Gly | Ser | Gly | Glu | Tyr | Thr | Ala | Glu | Glu | Leu |
| | | | 35 | | | | 40 | | | | | 45 | | | |
| Cys | Ile | Arg | Ala | Ala | Gln | Ala | Cys | Arg | Ile | Ser | Pro | Leu | Cys | His | Asn |
| | 50 | | | | | 55 | | | | 60 | | | | | |
| Leu | Phe | Ala | Leu | Tyr | Asp | Glu | Asn | Thr | Lys | Leu | Trp | Tyr | Ala | Pro | Asn |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 |
| Arg | Thr | Ile | Thr | Val | Asp | Asp | Lys | Met | Ser | Leu | Arg | Leu | His | Tyr | Arg |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Met | Arg | Phe | Tyr | Phe | Thr | Asn | Trp | His | Gly | Thr | Asn | Asp | Asn | Glu | Gln |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Ser | Val | Trp | Arg | His | Ser | Pro | Lys | Lys | Gln | Lys | Asn | Gly | Tyr | Glu | Lys |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Lys | Lys | Ile | Pro | Asp | Ala | Thr | Pro | Leu | Leu | Asp | Ala | Ser | Ser | Leu | Glu |
| | 130 | | | | | 135 | | | | | 140 | | | | |
| Tyr | Leu | Phe | Ala | Gln | Gly | Gln | Tyr | Asp | Leu | Val | Lys | Cys | Leu | Ala | Pro |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| Ile | Arg | Asp | Pro | Lys | Thr | Glu | Gln | Asp | Gly | His | Asp | Ile | Glu | Asn | Glu |
| | | | | 165 | | | | | 170 | | | | | 175 | |
| Cys | Leu | Gly | Met | Ala | Val | Leu | Ala | Ile | Ser | His | Tyr | Ala | Met | Met | Lys |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Lys | Met | Gln | Leu | Pro | Glu | Leu | Pro | Lys | Asp | Ile | Ser | Tyr | Lys | Arg | Tyr |
| | | 195 | | | | | 200 | | | | | 205 | | | |
| Ile | Pro | Glu | Thr | Leu | Asn | Lys | Ser | Ile | Arg | Gln | Arg | Asn | Leu | Leu | Thr |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Arg | Met | Arg | Ile | Asn | Asn | Val | Phe | Lys | Asp | Phe | Leu | Lys | Glu | Phe | Asn |
| 225 | | | | 230 | | | | | | 235 | | | | | 240 |
| Asn | Lys | Thr | Ile | Cys | Asp | Ser | Ser | Val | Ser | Thr | His | Asp | Leu | Lys | Val |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Lys | Tyr | Leu | Ala | Thr | Leu | Glu | Thr | Leu | Lys | His | Tyr | Gly | Ala | Glu | |
| | | | 260 | | | | | 265 | | | | 270 | | | |
| Ile | Phe | Glu | Thr | Ser | Met | Leu | Leu | Ile | Ser | Ser | Glu | Asn | Glu | Met | Asn |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Trp | Phe | His | Ser | Asn | Asp | Gly | Gly | Asn | Val | Leu | Tyr | Tyr | Glu | Val | Met |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Val | Thr | Gly | Asn | Leu | Gly | Ile | Gln | Trp | Arg | His | Lys | Pro | Asn | Val | Val |
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| Ser | Val | Glu | Lys | Glu | Lys | Asn | Lys | Leu | Lys | Arg | Lys | Lys | Leu | Glu | Asn |
| | | | | 325 | | | | | 330 | | | | 335 | | |
| Lys | Asp | Lys | Lys | Asp | Glu | Glu | Lys | Asn | Lys | Ile | Arg | Glu | Glu | Trp | Asn |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Asn | Phe | Ser | Phe | Phe | Pro | Glu | Ile | Thr | His | Ile | Val | Ile | Lys | Glu | Ser |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Val | Val | Ser | Ile | Asn | Lys | Gln | Asp | Asn | Lys | Lys | Met | Glu | Leu | Lys | Leu |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Ser | Ser | His | Glu | Glu | Ala | Leu | Ser | Phe | Val | Ser | Leu | Val | Asp | Gly | Tyr |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Phe | Arg | Leu | Thr | Ala | Asp | Ala | His | His | Tyr | Leu | Cys | Thr | Asp | Val | Ala |

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
| | | | | 405 | | | | | 410 | | | | | 415 | | | |
| Pro | Pro | Leu | Ile | Val | His | Asn | Ile | Gln | Asn | Gly | Cys | His | Gly | Pro | Ile | | |
| | | | 420 | | | | | | 425 | | | | 430 | | | | |
| Cys | Thr | Glu | Tyr | Ala | Ile | Asn | Lys | Leu | Arg | Gln | Glu | Gly | Ser | Glu | Glu | | |
| | | 435 | | | | | 440 | | | | | 445 | | | | | |
| Gly | Met | Tyr | Val | Leu | Arg | Trp | Ser | Cys | Thr | Asp | Phe | Asp | Asn | Ile | Leu | | |
| | 450 | | | | | 455 | | | | 460 | | | | | | | |
| Met | Thr | Val | Thr | Cys | Phe | Glu | Lys | Ser | Glu | Gln | Val | Gln | Gly | Ala | Gln | | |
| | 465 | | | | 470 | | | | | 475 | | | | | 480 | | |
| Lys | Gln | Phe | Lys | Asn | Phe | Gln | Ile | Glu | Val | Gln | Lys | Gly | Arg | Tyr | Ser | | |
| | | | | 485 | | | | | 490 | | | | | 495 | | | |
| Leu | His | Gly | Ser | Asp | Arg | Ser | Phe | Pro | Ser | Leu | Gly | Asp | Leu | Met | Ser | | |
| | | | 500 | | | | | 505 | | | | | 510 | | | | |
| His | Leu | Lys | Lys | Gln | Ile | Leu | Arg | Thr | Asp | Asn | Ile | Ser | Phe | Met | Leu | | |
| | 515 | | | | | | 520 | | | | | 525 | | | | | |
| Lys | Arg | Cys | Cys | Gln | Pro | Lys | Pro | Arg | Glu | Ile | Ser | Asn | Leu | Leu | Val | | |
| | 530 | | | | | 535 | | | | | 540 | | | | | | |
| Ala | Thr | Lys | Lys | Ala | Gln | Glu | Trp | Gln | Pro | Val | Tyr | Pro | Met | Ser | Gln | | |
| | 545 | | | | 550 | | | | | 555 | | | | | 560 | | |
| Leu | Ser | Phe | Asp | Arg | Ile | Leu | Lys | Lys | Asp | Leu | Val | Gln | Gly | Glu | His | | |
| | | | 565 | | | | | | 570 | | | | | 575 | | | |
| Leu | Gly | Arg | Gly | Thr | Arg | Thr | His | Ile | Tyr | Ser | Gly | Thr | Leu | Met | Asp | | |
| | | 580 | | | | | | 585 | | | | | 590 | | | | |
| Tyr | Lys | Asp | Asp | Glu | Gly | Thr | Ser | Glu | Glu | Lys | Lys | Ile | Lys | Val | Ile | | |
| | | 595 | | | | | 600 | | | | | 605 | | | | | |
| Leu | Lys | Val | Leu | Asp | Pro | Ser | His | Arg | Asp | Ile | Ser | Leu | Ala | Phe | Phe | | |
| | 610 | | | | | 615 | | | | | 620 | | | | | | |
| Glu | Ala | Ala | Ser | Met | Met | Arg | Gln | Val | Ser | His | Lys | His | Ile | Val | Tyr | | |
| | 625 | | | | 630 | | | | | 635 | | | | | 640 | | |
| Leu | Tyr | Gly | Val | Cys | Val | Arg | Asp | Val | Glu | Asn | Ile | Met | Val | Glu | Glu | | |
| | | | 645 | | | | | 650 | | | | | 655 | | | | |
| Phe | Val | Glu | Gly | Gly | Pro | Leu | Asp | Leu | Phe | Met | His | Arg | Lys | Ser | Asp | | |
| | | 660 | | | | | 665 | | | | | 670 | | | | | |
| Val | Leu | Thr | Thr | Pro | Trp | Lys | Phe | Lys | Val | Ala | Lys | Gln | Leu | Ala | Ser | | |
| | 675 | | | | | | 680 | | | | | 685 | | | | | |
| Ala | Leu | Ser | Tyr | Leu | Glu | Asp | Lys | Asp | Leu | Val | His | Gly | Asn | Val | Cys | | |
| | 690 | | | | | 695 | | | | 700 | | | | | | | |
| Thr | Lys | Asn | Leu | Leu | Leu | Ala | Arg | Glu | Gly | Ile | Asp | Ser | Glu | Cys | Gly | | |
| | 705 | | | | 710 | | | | | 715 | | | | | 720 | | |
| Pro | Phe | Ile | Lys | Leu | Ser | Asp | Pro | Gly | Ile | Pro | Ile | Thr | Val | Leu | Ser | | |
| | | | 725 | | | | | 730 | | | | | 735 | | | | |
| Arg | Gln | Glu | Cys | Ile | Glu | Arg | Ile | Pro | Trp | Ile | Ala | Pro | Glu | Cys | Val | | |
| | | 740 | | | | | 745 | | | | | 750 | | | | | |
| Glu | Asp | Ser | Lys | Asn | Leu | Ser | Val | Ala | Ala | Asp | Lys | Trp | Ser | Phe | Gly | | |
| | 755 | | | | | 760 | | | | | 765 | | | | | | |
| Thr | Thr | Leu | Trp | Glu | Ile | Cys | Tyr | Asn | Gly | Glu | Ile | Pro | Leu | Lys | Asp | | |
| | 770 | | | | 775 | | | | | | 780 | | | | | | |
| Lys | Thr | Leu | Ile | Glu | Lys | Glu | Arg | Phe | Tyr | Glu | Ser | Arg | Cys | Arg | Pro | | |
| | 785 | | | | 790 | | | | 795 | | | | | | 800 | | |
| Val | Thr | Pro | Ser | Cys | Lys | Glu | Leu | Ala | Asp | Leu | Met | Thr | Arg | Cys | Met | | |
| | | | 805 | | | | | 810 | | | | | 815 | | | | |
| Asn | Tyr | Asp | Pro | Asn | Gln | Arg | Pro | Phe | Arg | Ala | Ile | Met | Arg | Asp | | | |
| | | | 820 | | | | | 825 | | | | 830 | | | | | |
| Ile | Asn | Lys | Leu | Glu | Glu | Gln | Asn | Pro | Asp | Ile | Val | Ser | Arg | Lys | Lys | | |
| | 835 | | | | | 840 | | | | | 845 | | | | | | |
| Asn | Gln | Pro | Thr | Glu | Val | Asp | Pro | Thr | His | Phe | Glu | Lys | Arg | Phe | Leu | | |
| | 850 | | | | | 855 | | | | | 860 | | | | | | |

Lys Arg Ile Arg Asp Leu Gly Glu Gly His Phe Gly Lys Val Glu Leu
 865 870 875 880
 Cys Arg Tyr Asp Pro Glu Asp Asn Thr Gly Glu Gln Val Ala Val Lys
 885 890 895
 Ser Leu Lys Pro Glu Ser Gly Gly Asn His Ile Ala Asp Leu Lys Lys
 900 905 910
 Glu Ile Glu Ile Leu Arg Asn Leu Tyr His Glu Asn Ile Val Lys Tyr
 915 920 925
 Lys Gly Ile Cys Thr Glu Asp Gly Gly Asn Gly Ile Lys Leu Ile Met
 930 935 940
 Glu Phe Leu Pro Ser Gly Ser Leu Lys Glu Tyr Leu Pro Lys Asn Lys
 945 950 955 960
 Asn Lys Ile Asn Leu Lys Gln Gln Leu Lys Tyr Ala Val Gln Ile Cys
 965 970 975
 Lys Gly Met Asp Tyr Leu Gly Ser Arg Gln Tyr Val His Arg Asp Leu
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 Ala Ala Arg Asn Val Leu Val Glu Ser Glu His Gln Val Lys Ile Gly
 995 1000 1005
 Asp Phe Gly Leu Thr Lys Ala Ile Glu Thr Asp Lys Glu Tyr Tyr Thr
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 Val Lys Asp Asp Arg Asp Ser Pro Val Phe Trp Tyr Ala Pro Glu Cys
 1025 1030 1035 1040
 Leu Met Gln Ser Lys Phe Tyr Ile Ala Ser Asp Val Trp Ser Phe Gly
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 Val Thr Leu His Glu Leu Leu Thr Tyr Cys Asp Ser Asp Ser Ser Pro
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 Met Ala Leu Phe Leu Lys Met Ile Gly Pro Thr His Gly Gln Met Thr
 1075 1080 1085
 Val Thr Arg Leu Val Asn Thr Leu Lys Glu Gly Lys Arg Leu Pro Cys
 1090 1095 1100
 Pro Pro Asn Cys Pro Asp Glu Val Tyr Gln Leu Met Arg Lys Cys Trp
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<213> Homo sapiens

<400> 23

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 35 40 45
 Leu His Leu Gln Cys Arg Gly Glu Ala Ala His Lys Trp Ser Leu Pro
 50 55 60
 Glu Met Val Ser Lys Glu Ser Glu Arg Leu Ser Ile Thr Lys Ser Ala
 65 70 75 80
 Cys Gly Arg Asn Gly Lys Gln Phe Cys Ser Thr Leu Thr Leu Asn Thr
 85 90 95
 Ala Gln Ala Asn His Thr Gly Phe Tyr Ser Cys Lys Tyr Leu Ala Val
 100 105 110

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Pro | Thr | Ser | Lys | Lys | Lys | Glu | Thr | Glu | Ser | Ala | Ile | Tyr | Ile | Phe | Ile |
| | | 115 | | | | | | 120 | | | | 125 | | | |
| Ser | Asp | Thr | Gly | Arg | Pro | Phe | Val | Glu | Met | Tyr | Ser | Glu | Ile | Pro | Glu |
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| Ile | Ile | His | Met | Thr | Glu | Gly | Arg | Glu | Leu | Val | Ile | Pro | Cys | Arg | Val |
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| Thr | Ser | Pro | Asn | Ile | Thr | Val | Thr | Leu | Lys | Phe | Pro | Leu | Asp | Thr | |
| | | | 165 | | | | | | 170 | | | | | 175 | |
| Leu | Ile | Pro | Asp | Gly | Lys | Arg | Ile | Ile | Trp | Asp | Ser | Arg | Lys | Gly | Phe |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Ile | Ile | Ser | Asn | Ala | Thr | Tyr | Lys | Glu | Ile | Gly | Leu | Leu | Thr | Cys | Glu |
| | | 195 | | | | | 200 | | | | | 205 | | | |
| Ala | Thr | Val | Asn | Gly | His | Leu | Tyr | Lys | Thr | Asn | Tyr | Leu | Thr | His | Arg |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Gln | Thr | Asn | Thr | Ile | Ile | Asp | Val | Gln | Ile | Ser | Thr | Pro | Arg | Pro | Val |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Lys | Leu | Leu | Arg | Gly | His | Thr | Leu | Val | Leu | Asn | Cys | Thr | Ala | Thr | Thr |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Pro | Leu | Asn | Thr | Arg | Val | Gln | Met | Thr | Trp | Ser | Tyr | Pro | Asp | Glu | Lys |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Asn | Lys | Arg | Ala | Ser | Val | Arg | Arg | Ile | Asp | Gln | Ser | Asn | Ser | His | |
| | | 275 | | | | 280 | | | | | 285 | | | | |
| Ala | Asn | Ile | Phe | Tyr | Ser | Val | Leu | Thr | Ile | Asp | Lys | Met | Gln | Asn | Lys |
| | 290 | | | | | 295 | | | | 300 | | | | | |
| Asp | Lys | Gly | Leu | Tyr | Thr | Cys | Arg | Val | Arg | Ser | Gly | Pro | Ser | Phe | Lys |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Ser | Val | Asn | Thr | Ser | Val | His | Ile | Tyr | Asp | Lys | Ala | Phe | Ile | Thr | Val |
| | | | | 325 | | | | | 330 | | | | | 335 | |
| Lys | His | Arg | Lys | Gln | Gln | Val | Leu | Glu | Thr | Val | Ala | Gly | Lys | Arg | Ser |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Tyr | Arg | Leu | Ser | Met | Lys | Val | Lys | Ala | Phe | Pro | Ser | Pro | Glu | Val | Val |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Trp | Leu | Lys | Asp | Gly | Leu | Pro | Ala | Thr | Glu | Lys | Ser | Ala | Arg | Tyr | Leu |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Thr | Arg | Gly | Tyr | Ser | Leu | Ile | Ile | Lys | Asp | Val | Thr | Glu | Glu | Asp | Ala |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Gly | Asn | Tyr | Thr | Ile | Leu | Leu | Ser | Ile | Lys | Gln | Ser | Asn | Val | Phe | Lys |
| | | | | 405 | | | | | 410 | | | | | 415 | |
| Asn | Leu | Thr | Ala | Thr | Leu | Ile | Val | Asn | Val | Lys | Pro | Gln | Ile | Tyr | Glu |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Lys | Ala | Val | Ser | Ser | Phe | Pro | Asp | Pro | Ala | Leu | Tyr | Pro | Leu | Gly | Ser |
| | | 435 | | | | | 440 | | | | | 445 | | | |
| Arg | Gln | Ile | Leu | Thr | Cys | Thr | Ala | Tyr | Gly | Ile | Pro | Gln | Pro | Thr | Ile |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Lys | Trp | Phe | Trp | His | Pro | Cys | Asn | His | Asn | His | Ser | Glu | Ala | Arg | Cys |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Asp | Phe | Cys | Ser | Asn | Asn | Glu | Glu | Ser | Phe | Ile | Leu | Asp | Ala | Asp | Ser |
| | | | | 485 | | | | | 490 | | | | | 495 | |
| Asn | Met | Gly | Asn | Arg | Ile | Glu | Ser | Ile | Thr | Gln | Arg | Met | Ala | Ile | Ile |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Glu | Gly | Lys | Asn | Lys | Met | Ala | Ser | Thr | Leu | Val | Val | Ala | Asp | Ser | Arg |
| | | 515 | | | | | 520 | | | | | 525 | | | |
| Ile | Ser | Gly | Ile | Tyr | Ile | Cys | Ile | Ala | Ser | Asn | Lys | Val | Gly | Thr | Val |
| | 530 | | | | | 535 | | | | | 540 | | | | |
| Gly | Arg | Asn | Ile | Ser | Phe | Tyr | Ile | Thr | Asp | Val | Pro | Asn | Gly | Phe | His |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 |
| Val | Asn | Leu | Glu | Lys | Met | Pro | Thr | Glu | Gly | Glu | Asp | Leu | Lys | Leu | Ser |

| | | | | | | | | | | | | | | | | | |
|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|--|--|
| | | | | 565 | | | | | 570 | | | | | 575 | | | |
| Cys | Thr | Val | Asn | Lys | Phe | Leu | Tyr | Arg | Asp | Val | Thr | Trp | Ile | Leu | Leu | | |
| | | | 580 | | | | | 585 | | | | | 590 | | | | |
| Arg | Thr | Val | Asn | Asn | Arg | Thr | Met | His | Tyr | Ser | Ile | Ser | Lys | Gln | Lys | | |
| | | 595 | | | | | 600 | | | | | 605 | | | | | |
| Met | Ala | Ile | Thr | Lys | Glu | His | Ser | Ile | Thr | Leu | Asn | Leu | Thr | Ile | Met | | |
| | 610 | | | | | 615 | | | | | 620 | | | | | | |
| Asn | Val | Ser | Leu | Gln | Asp | Ser | Gly | Thr | Tyr | Ala | Cys | Arg | Ala | Arg | Asn | | |
| | 625 | | | | 630 | | | | | 635 | | | | | 640 | | |
| Val | Tyr | Thr | Gly | Glu | Glu | Ile | Leu | Gln | Lys | Lys | Glu | Ile | Thr | Ile | Arg | | |
| | | | 645 | | | | | 650 | | | | | | 655 | | | |
| Asp | Gln | Glu | Ala | Pro | Tyr | Leu | Leu | Arg | Asn | Leu | Ser | Asp | His | Thr | Val | | |
| | | | 660 | | | | | 665 | | | | | 670 | | | | |
| Ala | Ile | Ser | Ser | Ser | Thr | Thr | Leu | Asp | Cys | His | Ala | Asn | Gly | Val | Pro | | |
| | | 675 | | | | | 680 | | | | | 685 | | | | | |
| Glu | Pro | Gln | Ile | Thr | Trp | Phe | Lys | Asn | Asn | His | Lys | Ile | Gln | Gln | Glu | | |
| | 690 | | | | | 695 | | | | | 700 | | | | | | |
| Pro | Gly | Ile | Ile | Leu | Gly | Pro | Gly | Ser | Ser | Thr | Leu | Phe | Ile | Glu | Arg | | |
| | 705 | | | | 710 | | | | | 715 | | | | | 720 | | |
| Val | Thr | Glu | Glu | Asp | Glu | Gly | Val | Tyr | His | Cys | Lys | Ala | Thr | Asn | Gln | | |
| | | | 725 | | | | | 730 | | | | | | 735 | | | |
| Lys | Gly | Ser | Val | Glu | Ser | Ser | Ala | Tyr | Leu | Thr | Val | Gln | Gly | Thr | Ser | | |
| | | 740 | | | | | | 745 | | | | | 750 | | | | |
| Asp | Lys | Ser | Asn | Leu | Glu | Leu | Ile | Thr | Leu | Thr | Cys | Thr | Cys | Val | Ala | | |
| | | 755 | | | | | 760 | | | | | 765 | | | | | |
| Ala | Thr | Leu | Phe | Trp | Leu | Leu | Leu | Thr | Leu | Leu | Ile | Arg | Lys | Met | Lys | | |
| | 770 | | | | | 775 | | | | | 780 | | | | | | |
| Arg | Ser | Ser | Ser | Glu | Ile | Lys | Thr | Asp | Tyr | Leu | Ser | Ile | Ile | Met | Asp | | |
| | 785 | | | | 790 | | | | | 795 | | | | 800 | | | |
| Pro | Asp | Glu | Val | Pro | Leu | Asp | Glu | Gln | Cys | Glu | Arg | Leu | Pro | Tyr | Asp | | |
| | | | 805 | | | | | 810 | | | | | | 815 | | | |
| Ala | Ser | Lys | Trp | Glu | Phe | Ala | Arg | Glu | Arg | Leu | Lys | Leu | Gly | Lys | Ser | | |
| | | | 820 | | | | | 825 | | | | | 830 | | | | |
| Leu | Gly | Arg | Gly | Ala | Phe | Gly | Lys | Val | Val | Gln | Ala | Ser | Ala | Phe | Gly | | |
| | 835 | | | | | | 840 | | | | | 845 | | | | | |
| Ile | Lys | Lys | Ser | Pro | Thr | Cys | Arg | Thr | Val | Ala | Val | Lys | Met | Leu | Lys | | |
| | 850 | | | | | 855 | | | | | 860 | | | | | | |
| Glu | Gly | Ala | Thr | Ala | Ser | Glu | Tyr | Lys | Ala | Leu | Met | Thr | Glu | Leu | Lys | | |
| | 865 | | | | 870 | | | | | 875 | | | | | 880 | | |
| Ile | Leu | Thr | His | Ile | Gly | His | His | Leu | Asn | Val | Val | Asn | Leu | Leu | Gly | | |
| | | | 885 | | | | | 890 | | | | | | 895 | | | |
| Ala | Cys | Thr | Lys | Gln | Gly | Gly | Pro | Leu | Met | Val | Ile | Val | Glu | Tyr | Cys | | |
| | | | 900 | | | | | 905 | | | | | 910 | | | | |
| Lys | Tyr | Gly | Asn | Leu | Ser | Asn | Tyr | Leu | Lys | Ser | Lys | Arg | Asp | Leu | Phe | | |
| | | 915 | | | | | 920 | | | | | 925 | | | | | |
| Phe | Leu | Asn | Lys | Asp | Ala | Ala | Leu | His | Met | Glu | Pro | Lys | Lys | Glu | Lys | | |
| | 930 | | | | | 935 | | | | | 940 | | | | | | |
| Met | Glu | Pro | Gly | Leu | Glu | Gln | Gly | Lys | Lys | Pro | Arg | Leu | Asp | Ser | Val | | |
| | 945 | | | | 950 | | | | | 955 | | | | 960 | | | |
| Thr | Ser | Ser | Glu | Ser | Phe | Ala | Ser | Ser | Gly | Phe | Gln | Glu | Asp | Lys | Ser | | |
| | | | 965 | | | | | | 970 | | | | | 975 | | | |
| Leu | Ser | Asp | Val | Glu | Glu | Glu | Glu | Asp | Ser | Asp | Gly | Phe | Tyr | Lys | Glu | | |
| | | | 980 | | | | | 985 | | | | | 990 | | | | |
| Pro | Ile | Thr | Met | Glu | Asp | Leu | Ile | Ser | Tyr | Ser | Phe | Gln | Val | Ala | Arg | | |
| | | 995 | | | | 1000 | | | | | 1005 | | | | | | |
| Gly | Met | Glu | Phe | Leu | Ser | Ser | Arg | Lys | Cys | Ile | His | Arg | Asp | Leu | Ala | | |
| | 1010 | | | | | 1015 | | | | | 1020 | | | | | | |

Ala Arg Asn Ile Leu Leu Ser Glu Asn Asn Val Val Lys Ile Cys Asp
 1025 1030 1035 1040
 Phe Gly Leu Ala Arg Asp Ile Tyr Lys Asn Pro Asp Tyr Val Arg Lys
 1045 1050 1055
 Gly Asp Thr Arg Leu Pro Leu Lys Trp Met Ala Pro Glu Ser Ile Phe
 1060 1065 1070
 Asp Lys Ile Tyr Ser Thr Lys Ser Asp Val Trp Ser Tyr Gly Val Leu
 1075 1080 1085
 Leu Trp Glu Ile Phe Ser Leu Gly Gly Ser Pro Tyr Pro Gly Val Gln
 1090 1095 1100
 Met Asp Glu Asp Phe Cys Ser Arg Leu Arg Glu Gly Met Arg Met Arg
 1105 1110 1115 1120
 Ala Pro Glu Tyr Ser Thr Pro Glu Ile Tyr Gln Ile Met Leu Asp Cys
 1125 1130 1135
 Trp His Arg Asp Pro Lys Glu Arg Pro Arg Phe Ala Glu Leu Val Glu
 1140 1145 1150
 Lys Leu Gly Asp Leu Leu Gln Ala Asn Val Gln Gln Asp Gly Lys Asp
 1155 1160 1165
 Tyr Ile Pro Ile Asn Ala Ile Leu Thr Gly Asn Ser Gly Phe Thr Tyr
 1170 1175 1180
 Ser Thr Pro Ala Phe Ser Glu Asp Phe Phe Lys Glu Ser Ile Ser Ala
 1185 1190 1195 1200
 Pro Lys Phe Asn Ser Gly Ser Ser Asp Asp Val Arg Tyr Val Asn Ala
 1205 1210 1215
 Phe Lys Phe Met Ser Leu Glu Arg Ile Lys Thr Phe Glu Glu Leu Leu
 1220 1225 1230
 Pro Asn Ala Thr Ser Met Phe Asp Asp Tyr Gln Gly Asp Ser Ser Thr
 1235 1240 1245
 Leu Leu Ala Ser Pro Met Leu Lys Arg Phe Thr Trp Thr Asp Ser Lys
 1250 1255 1260
 Pro Lys Ala Ser Leu Lys Ile Asp Leu Arg Val Thr Ser Lys Ser Lys
 1265 1270 1275 1280
 Glu Ser Gly Leu Ser Asp Val Ser Arg Pro Ser Phe Cys His Ser Ser
 1285 1290 1295
 Cys Gly His Val Ser Glu Gly Lys Arg Arg Phe Thr Tyr Asp His Ala
 1300 1305 1310
 Glu Leu Glu Arg Lys Ile Ala Cys Cys Ser Pro Pro Pro Asp Tyr Asn
 1315 1320 1325
 Ser Val Val Leu Tyr Ser Thr Pro Pro Ile
 1330 1335

<210> 24

<211> 309

<212> PRT

<213> Homo sapiens

<400> 24

Met Asp Glu Lys Val Phe Thr Lys Glu Leu Asp Gln Trp Ile Glu Gln
 1 5 10 15
 Leu Asn Glu Cys Lys Gln Leu Ser Glu Ser Gln Val Lys Ser Leu Cys
 20 25 30
 Glu Lys Ala Lys Glu Ile Leu Thr Lys Glu Ser Asn Val Gln Glu Val
 35 40 45
 Arg Cys Pro Val Thr Val Cys Gly Asp Val His Gly Gln Phe His Asp
 50 55 60
 Leu Met Glu Leu Phe Arg Ile Gly Gly Lys Ser Pro Asp Thr Asn Tyr
 65 70 75 80

[illegible]

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<210> 25
<211> 394
<212> PRT
<213> Homo sapiens
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| | | | | | | | | | | | | | | | |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| <400> 25 | | | | | | | | | | | | | | | |
| Met | Val | Thr | Met | Glu | Glu | Leu | Arg | Glu | Met | Asp | Cys | Ser | Val | Leu | Lys |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Arg | Leu | Met | Asn | Arg | Asp | Glu | Asn | Gly | Gly | Gly | Ala | Gly | Gly | Ser | Gly |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Ser | His | Gly | Thr | Leu | Gly | Leu | Pro | Ser | Gly | Gly | Lys | Cys | Leu | Leu | Leu |
| | | 35 | | | | | 40 | | | | | 45 | | | |
| Asp | Cys | Arg | Pro | Phe | Leu | Ala | His | Ser | Ala | Gly | Tyr | Ile | Leu | Gly | Ser |
| | 50 | | | | | 55 | | | | | 60 | | | | |
| Val | Asn | Val | Arg | Cys | Asn | Thr | Ile | Val | Arg | Arg | Arg | Ala | Lys | Gly | Ser |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 |
| Val | Ser | Leu | Glu | Gln | Ile | Leu | Pro | Ala | Glu | Glu | Glu | Val | Arg | Ala | Arg |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Leu | Arg | Ser | Gly | Leu | Tyr | Ser | Ala | Val | Ile | Val | Tyr | Asp | Glu | Gly | Ser |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Pro | Arg | Ala | Glu | Ser | Leu | Arg | Glu | Asp | Ser | Thr | Val | Ser | Leu | Val | Val |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Gln | Ala | Leu | Arg | Arg | Asn | Ala | Glu | Arg | Thr | Asp | Ile | Cys | Leu | Leu | Lys |
| | 130 | | | | | 135 | | | | | 140 | | | | |
| Gly | Gly | Tyr | Glu | Arg | Phe | Ser | Ser | Glu | Tyr | Pro | Glu | Phe | Cys | Ser | Lys |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |

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Thr Lys Ala Leu Ala Ala Ile Pro Pro Pro Val Pro Pro Ser Ala Thr
      165                      170                      175
Glu Pro Leu Asp Leu Gly Cys Ser Ser Cys Gly Thr Pro Leu His Asp
      180                      185                      190
Gln Gly Gly Pro Val Glu Ile Leu Pro Phe Leu Tyr Leu Gly Ser Ala
      195                      200                      205
Tyr His Ala Ala Arg Arg Asp Met Leu Asp Ala Leu Gly Ile Thr Ala
      210                      215                      220
Leu Leu Asn Val Ser Ser Asp Cys Pro Asn His Phe Glu Gly His Tyr
      225                      230                      235                      240
Gln Tyr Lys Cys Ile Pro Val Glu Asp Asn His Lys Ala Asp Ile Ser
      245                      250                      255
Ser Trp Phe Met Glu Ala Ile Glu Tyr Ile Asp Ala Val Lys Asp Cys
      260                      265                      270
Arg Gly Arg Val Leu Val His Cys Gln Ala Gly Ile Ser Arg Ser Ala
      275                      280                      285
Thr Ile Cys Leu Ala Tyr Leu Met Met Lys Lys Arg Val Arg Leu Glu
      290                      295                      300
Glu Ala Phe Glu Phe Val Lys Gln Arg Arg Ser Ile Ile Ser Pro Asn
      305                      310                      315                      320
Phe Ser Phe Met Gly Gln Leu Leu Gln Phe Glu Ser Gln Val Leu Ala
      325                      330                      335
Thr Ser Cys Ala Ala Glu Ala Ala Ser Pro Ser Gly Pro Leu Arg Glu
      340                      345                      350
Arg Gly Lys Thr Pro Ala Thr Pro Thr Ser Gln Phe Val Phe Ser Phe
      355                      360                      365
Pro Val Ser Val Gly Val His Ser Ala Pro Ser Ser Leu Pro Tyr Leu
      370                      375                      380
His Ser Pro Ile Thr Thr Ser Pro Ser Cys
      385                      390

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<210> 26

<211> 185

<212> PRT

<213> Homo sapiens

<400> 26

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Met Ser Gly Ser Phe Glu Leu Ser Val Gln Asp Leu Asn Asp Leu Leu
  1      5      10      15
Ser Asp Gly Ser Gly Cys Tyr Ser Leu Pro Ser Gln Pro Cys Asn Glu
      20      25      30
Val Thr Pro Arg Ile Tyr Val Gly Asn Ala Ser Val Ala Gln Asp Ile
      35      40      45
Pro Lys Leu Gln Lys Leu Gly Ile Thr His Val Leu Asn Ala Ala Glu
      50      55      60
Gly Arg Ser Phe Met His Val Asn Thr Asn Ala Asn Phe Tyr Lys Asp
      65      70      75      80
Ser Gly Ile Thr Tyr Leu Gly Ile Lys Ala Asn Asp Thr Gln Glu Phe
      85      90      95
Asn Leu Ser Ala Tyr Phe Glu Arg Ala Ala Asp Phe Ile Asp Gln Ala
      100     105     110
Leu Ala Gln Lys Asn Gly Arg Val Leu Val His Cys Arg Glu Gly Tyr
      115     120     125
Ser Arg Ser Pro Thr Leu Val Ile Ala Tyr Leu Met Met Arg Gln Lys
      130     135     140
Met Asp Val Lys Ser Ala Leu Ser Ile Val Arg Gln Asn Arg Glu Ile
      145     150     155     160

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Gly Pro Asn Asp Gly Phe Leu Ala Gln Leu Cys Gln Leu Asn Asp Arg
 165 170 175
 Leu Ala Lys Glu Gly Lys Leu Lys Pro
 180 185

<210> 27
 <211> 657
 <212> PRT
 <213> Homo sapiens

<400> 27
 Met Arg Arg Ala Val Cys Phe Pro Ala Leu Cys Leu Leu Leu Asn Leu
 1 5 10 15
 His Ala Ala Gly Cys Phe Ser Gly Asn Asn Asp His Phe Leu Ala Ile
 20 25 30
 Asn Gln Lys Lys Ser Gly Lys Pro Val Phe Ile Tyr Lys His Ser Gln
 35 40 45
 Asp Ile Glu Lys Ser Leu Asp Ile Ala Pro Gln Lys Ile Tyr Arg His
 50 55 60
 Ser Tyr His Ser Ser Ser Glu Ala Gln Val Ser Lys Arg His Gln Ile
 65 70 75 80
 Val Asn Ser Ala Phe Pro Arg Pro Ala Tyr Asp Pro Ser Leu Asn Leu
 85 90 95
 Leu Ala Met Asp Gly Gln Asp Leu Glu Val Glu Asn Leu Pro Ile Pro
 100 105 110
 Ala Ala Asn Val Ile Val Val Thr Leu Gln Met Asp Val Asn Lys Leu
 115 120 125
 Asn Ile Thr Leu Leu Arg Ile Phe Arg Gln Gly Val Ala Ala Ala Leu
 130 135 140
 Gly Leu Leu Pro Gln Gln Val His Ile Asn Arg Leu Ile Gly Lys Lys
 145 150 155 160
 Asn Ser Ile Glu Leu Phe Val Ser Pro Ile Asn Arg Lys Thr Gly Ile
 165 170 175
 Ser Asp Ala Leu Pro Ser Glu Glu Val Leu Arg Ser Leu Asn Ile Asn
 180 185 190
 Val Leu His Gln Ser Leu Ser Gln Phe Gly Ile Thr Glu Val Ser Pro
 195 200 205
 Glu Lys Asn Val Leu Gln Gly Gln His Glu Ala Asp Lys Ile Trp Ser
 210 215 220
 Lys Glu Gly Phe Tyr Ala Val Val Ile Phe Leu Ser Ile Phe Val Ile
 225 230 235 240
 Ile Val Thr Cys Leu Met Ile Leu Tyr Arg Leu Lys Glu Arg Phe Gln
 245 250 255
 Leu Ser Leu Arg Gln Asp Lys Glu Lys Asn Gln Glu Ile His Leu Ser
 260 265 270
 Pro Ile Thr Leu Gln Pro Ala Leu Ser Glu Ala Lys Thr Val His Ser
 275 280 285
 Met Val Gln Pro Glu Gln Ala Pro Lys Val Leu Asn Val Val Val Asp
 290 295 300
 Pro Gln Gly Arg Gly Ala Pro Glu Ile Arg Ala Thr Thr Ala Thr Ser
 305 310 315 320
 Val Cys Pro Ser Pro Phe Lys Met Lys Pro Ile Gly Leu Gln Glu Arg
 325 330 335
 Arg Gly Ser Asn Val Ser Leu Thr Leu Asp Met Ser Ser Leu Gly Asn
 340 345 350
 Ile Glu Pro Phe Val Ser Ile Pro Thr Pro Arg Glu Lys Val Ala Met
 355 360 365

Glu Tyr Leu Gln Ser Ala Ser Arg Ile Leu Thr Arg Ser Gln Leu Arg
 370 375 380
 Asp Val Val Ala Ser Ser His Leu Leu Gln Ser Glu Phe Met Glu Ile
 385 390 395 400
 Pro Met Asn Phe Val Asp Pro Lys Glu Ile Asp Ile Pro Arg His Gly
 405 410 415
 Thr Lys Asn Arg Tyr Lys Thr Ile Leu Pro Asn Pro Leu Ser Arg Val
 420 425 430
 Cys Leu Arg Pro Lys Asn Val Thr Asp Ser Leu Ser Thr Tyr Ile Asn
 435 440 445
 Ala Asn Tyr Ile Arg Gly Tyr Ser Gly Lys Glu Lys Ala Phe Ile Ala
 450 455 460
 Thr Gln Gly Pro Met Ile Asn Thr Val Asp Asp Phe Trp Gln Met Val
 465 470 475 480
 Trp Gln Glu Asp Ser Pro Val Ile Val Met Ile Thr Lys Leu Lys Glu
 485 490 495
 Lys Asn Glu Lys Cys Val Leu Tyr Trp Pro Glu Lys Arg Gly Ile Tyr
 500 505 510
 Gly Lys Val Glu Val Leu Val Ile Ser Val Asn Glu Cys Asp Asn Tyr
 515 520 525
 Thr Ile Arg Asn Leu Val Leu Lys Gln Gly Ser His Thr Gln His Val
 530 535 540
 Lys His Tyr Trp Tyr Thr Ser Trp Pro Asp His Lys Thr Pro Asp Ser
 545 550 555 560
 Ala Gln Pro Leu Leu Gln Leu Met Leu Asp Val Glu Glu Asp Arg Leu
 565 570 575
 Ala Ser Gln Gly Arg Gly Pro Val Val Val His Cys Ser Ala Gly Ile
 580 585 590
 Gly Arg Thr Gly Cys Phe Ile Ala Thr Ser Ile Gly Cys Gln Gln Leu
 595 600 605
 Lys Glu Glu Gly Val Val Asp Ala Leu Ser Ile Val Cys Gln Leu Arg
 610 615 620
 Met Asp Arg Gly Gly Met Val Gln Thr Ser Glu Gln Tyr Glu Phe Val
 625 630 635 640
 His His Ala Leu Cys Leu Tyr Glu Ser Arg Leu Ser Ala Glu Thr Val
 645 650 655
 Gln

<210> 28
 <211> 537
 <212> PRT
 <213> Homo sapiens

<400> 28
 Glu Arg Leu Leu Gly Arg Pro Gln Pro Ile Val Met Glu Ala Leu Asp
 1 5 10 15
 Glu Ala Glu Gly Leu Gln Asp Ser Gln Arg Glu Met Pro Pro Pro Pro
 20 25 30
 Pro Pro Ser Pro Pro Ser Asp Pro Ala Gln Lys Pro Pro Pro Arg Gly
 35 40 45
 Ala Gly Ser His Ser Leu Thr Val Arg Ser Ser Leu Cys Leu Phe Ala
 50 55 60
 Ala Ser Gln Phe Leu Leu Ala Cys Gly Val Leu Trp Phe Ser Gly Tyr
 65 70 75 80
 Gly His Met Trp Ser Gln Asn Ala Thr Asn Leu Val Ser Ser Leu Leu
 85 90 95

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Leu | Leu | Lys | Gln | Leu | Glu | Pro | Thr | Ser | Trp | Leu | Asp | Ser | Gly | Thr | 100 | 105 | 110 |
| Trp | Gly | Val | Pro | Gly | Leu | Leu | Leu | Val | Phe | Leu | Ser | Val | Gly | Leu | Val | 115 | 120 | 125 |
| Leu | Val | Thr | Thr | Leu | Val | Trp | His | Leu | Leu | Arg | Thr | Pro | Pro | Glu | Pro | 130 | 135 | 140 |
| Pro | Thr | Pro | Leu | Pro | Pro | Glu | Asp | Arg | Arg | Gln | Ser | Val | Ser | Arg | Gln | 145 | 150 | 155 |
| Pro | Ser | Phe | Thr | Tyr | Ser | Glu | Trp | Met | Glu | Glu | Lys | Ile | Glu | Asp | Asp | 165 | 170 | 175 |
| Phe | Leu | Asp | Leu | Asp | Pro | Val | Pro | Glu | Thr | Pro | Val | Phe | Asp | Cys | Val | 180 | 185 | 190 |
| Met | Asp | Ile | Lys | Pro | Glu | Ala | Asp | Pro | Thr | Ser | Leu | Thr | Val | Lys | Ser | 195 | 200 | 205 |
| Met | Gly | Leu | Gln | Glu | Arg | Arg | Gly | Ser | Asn | Val | Ser | Leu | Thr | Leu | Asp | 210 | 215 | 220 |
| Met | Cys | Thr | Pro | Gly | Cys | Asn | Glu | Glu | Gly | Phe | Gly | Tyr | Leu | Met | Ser | 225 | 230 | 235 |
| Pro | Arg | Glu | Glu | Ser | Ala | Arg | Glu | Tyr | Leu | Leu | Ser | Ala | Ser | Arg | Val | 245 | 250 | 255 |
| Leu | Gln | Ala | Glu | Glu | Leu | His | Glu | Lys | Ala | Leu | Asp | Pro | Phe | Leu | Leu | 260 | 265 | 270 |
| Gln | Ala | Glu | Phe | Phe | Glu | Ile | Pro | Met | Asn | Phe | Val | Val | Pro | Lys | Glu | 275 | 280 | 285 |
| Tyr | Asp | Ile | Pro | Gly | Arg | Cys | Arg | Lys | Asn | Arg | Tyr | Lys | Thr | Ile | Leu | 290 | 295 | 300 |
| Pro | Asn | Pro | His | Ser | Arg | Val | Cys | Leu | Thr | Ser | Pro | Asp | Pro | Asp | Asp | 305 | 310 | 315 |
| Pro | Leu | Ser | Ser | Tyr | Ile | Asn | Ala | Asn | Tyr | Ile | Arg | Gly | Tyr | Gly | Gly | 325 | 330 | 335 |
| Glu | Glu | Lys | Val | Tyr | Ile | Ala | Thr | Gln | Gly | Pro | Ile | Val | Ser | Thr | Val | 340 | 345 | 350 |
| Ala | Asp | Phe | Trp | Arg | Met | Val | Trp | Gln | Glu | His | Thr | Pro | Ile | Ile | Val | 355 | 360 | 365 |
| Met | Ile | Thr | Asn | Ile | Glu | Glu | Met | Asn | Glu | Lys | Cys | Thr | Glu | Tyr | Trp | 370 | 375 | 380 |
| Pro | Glu | Glu | Gln | Val | Ala | Tyr | Asp | Gly | Val | Glu | Ile | Thr | Val | Gln | Lys | 385 | 390 | 395 |
| Val | Ile | His | Thr | Glu | Asp | Tyr | Arg | Leu | Arg | Leu | Ile | Ser | Leu | Lys | Ser | 405 | 410 | 415 |
| Gly | Thr | Glu | Glu | Arg | Gly | Leu | Lys | His | Tyr | Trp | Phe | Thr | Ser | Trp | Pro | 420 | 425 | 430 |
| Asp | Gln | Lys | Thr | Pro | Asp | Arg | Ala | Pro | Pro | Leu | Leu | His | Leu | Val | Arg | 435 | 440 | 445 |
| Glu | Val | Glu | Glu | Ala | Ala | Gln | Gln | Glu | Gly | Pro | His | Cys | Ala | Pro | Ile | 450 | 455 | 460 |
| Ile | Val | His | Cys | Ser | Ala | Gly | Ile | Gly | Arg | Thr | Gly | Cys | Phe | Ile | Ala | 465 | 470 | 475 |
| Thr | Ser | Ile | Cys | Cys | Gln | Gln | Leu | Arg | Gln | Glu | Gly | Val | Val | Asp | Ile | 485 | 490 | 495 |
| Leu | Lys | Thr | Thr | Cys | Gln | Leu | Arg | Gln | Asp | Arg | Gly | Gly | Met | Ile | Gln | 500 | 505 | 510 |
| His | Cys | Glu | Gln | Tyr | Gln | Phe | Val | His | His | Val | Met | Ser | Leu | Tyr | Glu | 515 | 520 | 525 |
| Lys | Gln | Leu | Ser | His | Gln | Ser | Pro | Glu | | | | | | | | 530 | 535 | |

<210> 29
 <211> 403
 <212> PRT
 <213> Homo sapiens

<400> 29
 Met Thr Ala Ile Ile Lys Glu Ile Val Ser Arg Asn Lys Arg Arg Tyr
 1 5 10 15
 Gln Glu Asp Gly Phe Asp Leu Asp Leu Thr Tyr Ile Tyr Pro Asn Ile
 20 25 30
 Ile Ala Met Gly Phe Pro Ala Glu Arg Leu Glu Gly Val Tyr Arg Asn
 35 40 45
 Asn Ile Asp Asp Val Val Arg Phe Leu Asp Ser Lys His Lys Asn His
 50 55 60
 Tyr Lys Ile Tyr Asn Leu Cys Ala Glu Arg His Tyr Asp Thr Ala Lys
 65 70 75 80
 Phe Asn Cys Arg Val Ala Gln Tyr Pro Phe Glu Asp His Asn Pro Pro
 85 90 95
 Gln Leu Glu Leu Ile Lys Pro Phe Cys Glu Asp Leu Asp Gln Trp Leu
 100 105 110
 Ser Glu Asp Asp Asn His Val Ala Ile His Cys Lys Ala Gly Lys
 115 120 125
 Gly Arg Thr Gly Val Met Ile Cys Ala Tyr Leu Leu His Arg Gly Lys
 130 135 140
 Phe Leu Lys Ala Gln Glu Ala Leu Asp Phe Tyr Gly Glu Val Arg Thr
 145 150 155 160
 Arg Asp Lys Lys Gly Val Thr Ile Pro Ser Gln Arg Arg Tyr Val Tyr
 165 170 175
 Tyr Tyr Ser Tyr Leu Leu Lys Asn His Leu Asp Tyr Arg Pro Val Ala
 180 185 190
 Leu Leu Phe His Lys Met Met Phe Glu Thr Ile Pro Met Phe Ser Gly
 195 200 205
 Gly Thr Cys Asn Pro Gln Phe Val Val Cys Gln Leu Lys Val Lys Ile
 210 215 220
 Tyr Ser Ser Asn Ser Gly Pro Thr Arg Arg Glu Asp Lys Phe Met Tyr
 225 230 235 240
 Phe Glu Phe Pro Gln Pro Leu Pro Val Cys Gly Asp Ile Lys Val Glu
 245 250 255
 Phe Phe His Lys Gln Asn Lys Met Leu Lys Lys Asp Lys Met Phe His
 260 265 270
 Phe Trp Val Asn Thr Phe Phe Ile Pro Gly Pro Glu Glu Thr Ser Glu
 275 280 285
 Lys Val Glu Asn Gly Ser Leu Cys Asp Gln Glu Ile Asp Ser Ile Cys
 290 295 300
 Ser Ile Glu Arg Ala Asp Asn Asp Lys Glu Tyr Leu Val Leu Thr Leu
 305 310 315 320
 Thr Lys Asn Asp Leu Asp Lys Ala Asn Lys Asp Lys Ala Asn Arg Tyr
 325 330 335
 Phe Ser Pro Asn Phe Lys Val Lys Leu Tyr Phe Thr Lys Thr Val Glu
 340 345 350
 Glu Pro Ser Asn Pro Glu Ala Ser Ser Ser Thr Ser Val Thr Pro Asp
 355 360 365
 Val Ser Asp Asn Glu Pro Asp His Tyr Arg Tyr Ser Asp Thr Thr Asp
 370 375 380
 Ser Asp Pro Glu Asn Glu Pro Phe Asp Glu Asp Gln His Thr Gln Ile
 385 390 395 400
 Thr Lys Val

<210> 30
 <211> 447
 <212> PRT
 <213> Homo sapiens

<400> 30
 Met Arg Ser Ser Thr Leu Gln Asp Pro Arg Arg Arg Asp Pro Gln Asp
 1 5 10 15
 Asp Val Tyr Val Asp Ile Thr Asp Arg Leu Arg Phe Ala Ile Leu Tyr
 20 25 30
 Ser Arg Pro Lys Ser Ala Ser Asn Val His Tyr Phe Ser Ile Asp Asn
 35 40 45
 Glu Leu Glu Tyr Glu Asn Phe Ser Glu Asp Phe Gly Pro Leu Asn Leu
 50 55 60
 Ala Met Val Tyr Arg Tyr Cys Cys Lys Ile Asn Lys Lys Leu Lys Ser
 65 70 75 80
 Ile Thr Met Leu Arg Lys Lys Ile Val His Phe Thr Gly Ser Asp Gln
 85 90 95
 Arg Lys Gln Ala Asn Ala Ala Phe Leu Val Gly Cys Tyr Met Val Ile
 100 105 110
 Tyr Leu Gly Arg Thr Pro Glu Ala Ala Tyr Arg Ile Leu Ile Phe Gly
 115 120 125
 Asp Thr Pro Tyr Ile Pro Phe Arg Asp Ala Ala Tyr Gly Ser Cys Asn
 130 135 140
 Phe Tyr Ile Thr Leu Leu Asp Cys Phe His Ala Val Lys Lys Ala Met
 145 150 155 160
 Gln Tyr Gly Phe Leu Asn Phe Asn Ser Phe Asn Leu Asp Glu Tyr Glu
 165 170 175
 His Tyr Glu Lys Ala Glu Asn Gly Asp Leu Asn Trp Ile Ile Pro Asp
 180 185 190
 Arg Phe Ile Ala Phe Cys Gly Pro His Ser Arg Ala Arg Leu Glu Ser
 195 200 205
 Gly Tyr His Gln His Ser Pro Glu Thr Tyr Ile Gln Tyr Phe Lys Asn
 210 215 220
 His Asn Val Thr Thr Ile Arg Leu Asn Lys Arg Met Tyr Asp Ala
 225 230 235 240
 Lys Arg Phe Thr Asp Ala Gly Phe Asp His His Asp Leu Phe Phe Ala
 245 250 255
 Asp Gly Ser Thr Pro Thr Asp Ala Ile Val Lys Arg Phe Leu Asp Ile
 260 265 270
 Cys Glu Asn Ala Glu Gly Ala Ile Ala Val His Cys Lys Ala Gly Leu
 275 280 285
 Gly Arg Thr Gly Thr Leu Ile Ala Cys Tyr Ile Met Lys His Tyr Arg
 290 295 300
 Met Thr Ala Ala Glu Thr Ile Ala Trp Val Arg Ile Cys Arg Pro Gly
 305 310 315 320
 Leu Val Ile Gly Pro Gln Gln Gln Phe Leu Val Met Lys Gln Thr Ser
 325 330 335
 Leu Trp Leu Glu Gly Asp Tyr Phe Arg Gln Arg Leu Lys Gly Gln Glu
 340 345 350
 Asn Gly Gln His Arg Ala Ala Phe Ser Lys Leu Leu Ser Gly Val Asp
 355 360 365
 Asp Ile Ser Ile Asn Gly Val Glu Asn Gln Asp Gln Gln Glu Pro Lys
 370 375 380
 Pro Tyr Ser Asp Asp Asp Glu Ile Asn Gly Val Thr Gln Gly Asp Arg

```

385          390          395          400
Ser Arg Ala Leu Lys Arg Arg Arg Gln Ser Lys Thr Asn Asp Ile Leu
          405          410          415
Leu Pro Ser Pro Leu Ala Val Leu Thr Phe Thr Leu Cys Ser Val Val
          420          425          430
Ile Trp Trp Ile Val Cys Asp Tyr Ile Leu Pro Ile Leu Leu Phe
          435          440          445

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<210> 31
<211> 340
<212> PRT
<213> Homo sapiens

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<400> 31
Met Leu Glu Ala Pro Gly Pro Ser Asp Gly Cys Glu Leu Ser Asn Pro
 1          5          10          15
Ser Ala Ser Arg Val Ser Cys Ala Gly Gln Met Leu Glu Val Gln Pro
          20          25          30
Gly Leu Tyr Phe Gly Gly Ala Ala Ala Val Ala Glu Pro Asp His Leu
          35          40          45
Arg Glu Ala Gly Ile Thr Ala Val Leu Thr Val Asp Ser Glu Glu Pro
          50          55          60
Ser Phe Lys Ala Gly Pro Gly Val Glu Asp Leu Trp Arg Leu Phe Val
          65          70          75          80
Pro Ala Leu Asp Lys Pro Glu Thr Asp Leu Leu Ser His Leu Asp Arg
          85          90          95
Cys Val Ala Phe Ile Gly Gln Ala Arg Ala Glu Gly Arg Ala Val Leu
          100          105          110
Val His Cys His Ala Gly Val Ser Arg Ser Val Ala Ile Ile Thr Ala
          115          120          125
Phe Leu Met Lys Thr Asp Gln Leu Pro Phe Glu Lys Ala Tyr Glu Lys
          130          135          140
Leu Gln Ile Leu Lys Pro Glu Ala Lys Met Asn Glu Gly Phe Glu Trp
          145          150          155          160
Gln Leu Lys Leu Tyr Gln Ala Met Gly Tyr Glu Val Asp Thr Ser Ser
          165          170          175
Ala Ile Tyr Lys Gln Tyr Arg Leu Gln Lys Val Thr Glu Lys Tyr Pro
          180          185          190
Glu Leu Gln Asn Leu Pro Gln Glu Leu Phe Ala Val Asp Pro Thr Thr
          195          200          205
Val Ser Gln Gly Leu Lys Asp Glu Val Leu Tyr Lys Cys Arg Lys Cys
          210          215          220
Arg Arg Ser Leu Phe Arg Ser Ser Ser Ile Leu Asp His Arg Glu Gly
          225          230          235          240
Ser Gly Pro Ile Ala Phe Ala His Lys Arg Met Thr Pro Ser Ser Met
          245          250          255
Leu Thr Thr Gly Arg Gln Ala Gln Cys Thr Ser Tyr Phe Ile Glu Pro
          260          265          270
Val Gln Trp Met Glu Ser Ala Leu Leu Gly Val Met Asp Gly Gln Leu
          275          280          285
Leu Cys Pro Lys Cys Ser Ala Lys Leu Gly Ser Phe Asn Trp Tyr Gly
          290          295          300
Glu Gln Cys Ser Cys Gly Arg Trp Ile Thr Pro Ala Phe Gln Ile His
          305          310          315          320
Lys Asn Arg Val Asp Glu Met Lys Ile Leu Pro Val Leu Gly Ser Gln
          325          330          335
Thr Gly Lys Ile

```

340

<210> 32
 <211> 150
 <212> PRT
 <213> Homo sapiens

<400> 32
 Met Gly Val Gln Pro Pro Asn Phe Ser Trp Val Leu Pro Gly Arg Leu
 1 5 10 15
 Ala Gly Leu Ala Leu Pro Arg Leu Pro Ala His Tyr Gln Phe Leu Leu
 20 25 30
 Asp Leu Gly Val Arg His Leu Val Ser Leu Thr Glu Arg Gly Pro Pro
 35 40 45
 His Ser Asp Ser Cys Pro Gly Leu Thr Leu His Arg Leu Arg Ile Pro
 50 55 60
 Asp Phe Cys Pro Pro Ala Pro Asp Gln Ile Asp Arg Phe Val Gln Ile
 65 70 75 80
 Val Asp Glu Ala Asn Ala Arg Gly Glu Ala Val Gly Val His Cys Ala
 85 90 95
 Leu Gly Phe Gly Arg Thr Gly Thr Met Leu Ala Cys Tyr Leu Val Lys
 100 105 110
 Glu Arg Gly Leu Ala Ala Gly Asp Ala Ile Ala Glu Ile Arg Arg Leu
 115 120 125
 Arg Pro Gly Pro Ile Glu Thr Tyr Glu Gln Glu Lys Ala Val Phe Gln
 130 135 140
 Phe Tyr Gln Arg Thr Lys
 145 150

<210> 33
 <211> 322
 <212> PRT
 <213> Homo sapiens

<400> 33
 Gly Leu Met Leu Arg Arg Leu Arg Lys Gly Asn Leu Pro Ile Arg Ser
 1 5 10 15
 Ile Ile Pro Asn His Ala Asp Lys Glu Arg Phe Ala Thr Arg Cys Lys
 20 25 30
 Ala Ala Thr Val Leu Leu Tyr Asp Glu Ala Thr Ala Glu Trp Gln Pro
 35 40 45
 Glu Pro Gly Ala Pro Ala Ser Val Leu Gly Leu Leu Leu Gln Lys Leu
 50 55 60
 Arg Asp Asp Gly Cys Gln Ala Tyr Tyr Leu Gln Gly Gly Phe Asn Lys
 65 70 75 80
 Phe Gln Thr Glu Tyr Ser Glu His Cys Glu Thr Asn Val Asp Ser Ser
 85 90 95
 Ser Ser Pro Ser Ser Ser Pro Pro Thr Ser Val Leu Gly Leu Gly Gly
 100 105 110
 Leu Arg Ile Ser Ser Asp Cys Ser Asp Gly Glu Ser Asp Arg Glu Leu
 115 120 125
 Pro Ser Ser Ala Thr Glu Ser Asp Gly Ser Pro Val Pro Ser Ser Gln
 130 135 140
 Pro Ala Phe Pro Val Gln Ile Leu Pro Tyr Leu Tyr Leu Gly Cys Ala
 145 150 155 160
 Lys Asp Ser Thr Asn Leu Asp Val Leu Gly Lys Tyr Gly Ile Lys Tyr
 165 170 175

```

Ile Leu Asn Val Thr Pro Asn Leu Pro Asn Ala Phe Glu His Gly Gly
      180                      185                      190
Glu Phe Thr Tyr Lys Gln Ile Pro Ile Ser Asp His Trp Ser Gln Asn
      195                      200                      205
Leu Ser Gln Phe Phe Pro Glu Ala Ile Ser Phe Ile Asp Glu Ala Arg
      210                      215                      220
Ser Lys Lys Cys Gly Val Leu Val His Cys Leu Ala Gly Ile Ser Arg
      225                      230                      235                      240
Ser Val Thr Val Thr Val Ala Tyr Leu Met Gln Lys Met Asn Leu Ser
      245                      250                      255
Leu Asn Asp Ala Tyr Asp Phe Val Lys Arg Lys Lys Ser Asn Ile Ser
      260                      265                      270
Pro Asn Phe Asn Phe Met Gly Gln Leu Leu Asp Phe Glu Arg Thr Leu
      275                      280                      285
Gly Leu Ser Ser Pro Cys Asp Asn His Ala Ser Ser Glu Gln Leu Tyr
      290                      295                      300
Phe Ser Thr Pro Thr Asn His Asn Leu Phe Pro Leu Asn Thr Leu Glu
      305                      310                      315                      320
Ser Thr

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<210> 34

<211> 521

<212> PRT

<213> Homo sapiens

<400> 34

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Met Ser Glu Pro Lys Ala Ile Asp Pro Lys Leu Ser Thr Thr Asp Arg
  1      5      10      15
Val Val Lys Ala Val Pro Phe Pro Pro Ser His Arg Leu Thr Ala Lys
      20      25      30
Glu Val Phe Asp Asn Asp Gly Lys Pro Arg Val Asp Ile Leu Lys Ala
      35      40      45
His Leu Met Lys Glu Gly Arg Leu Glu Glu Ser Val Ala Leu Arg Ile
      50      55      60
Ile Thr Glu Gly Ala Ser Ile Leu Arg Gln Glu Lys Asn Leu Leu Asp
      65      70      75      80
Ile Asp Ala Pro Val Thr Val Cys Gly Asp Ile His Gly Gln Phe Phe
      85      90      95
Asp Leu Met Lys Leu Phe Glu Val Gly Gly Ser Pro Ala Asn Thr Arg
      100      105      110
Tyr Leu Phe Leu Gly Asp Tyr Val Asp Arg Gly Tyr Phe Ser Ile Glu
      115      120      125
Cys Val Leu Tyr Leu Trp Ala Leu Lys Ile Leu Tyr Pro Lys Thr Leu
      130      135      140
Phe Leu Leu Arg Gly Asn His Glu Cys Arg His Leu Thr Glu Tyr Phe
      145      150      155      160
Thr Phe Lys Gln Glu Cys Lys Ile Lys Tyr Ser Glu Arg Val Tyr Asp
      165      170      175
Ala Cys Met Asp Ala Phe Asp Cys Leu Pro Leu Ala Ala Leu Met Asn
      180      185      190
Gln Gln Phe Leu Cys Val His Gly Gly Leu Ser Pro Glu Ile Asn Thr
      195      200      205
Leu Asp Asp Ile Arg Lys Leu Asp Arg Phe Lys Glu Pro Pro Ala Tyr
      210      215      220
Gly Pro Met Cys Asp Ile Leu Trp Ser Asp Pro Leu Glu Asp Phe Gly
      225      230      235      240

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Asn Glu Lys Thr Gln Glu His Phe Thr His Asn Thr Val Arg Gly Cys
      245                      250          255
Ser Tyr Phe Tyr Ser Tyr Pro Ala Val Cys Glu Phe Leu Gln His Asn
      260                      265          270
Asn Leu Leu Ser Ile Leu Arg Ala His Glu Ala Gln Asp Ala Gly Tyr
      275                      280          285
Arg Met Tyr Arg Lys Ser Gln Thr Thr Gly Phe Pro Ser Leu Ile Thr
      290                      295          300
Ile Phe Ser Ala Pro Asn Tyr Leu Asp Val Tyr Asn Asn Lys Ala Ala
305                      310          315          320
Val Leu Lys Tyr Glu Asn Asn Val Met Asn Ile Arg Gln Phe Asn Cys
      325                      330          335
Ser Pro His Pro Tyr Trp Leu Pro Asn Phe Met Asp Val Phe Thr Trp
      340                      345          350
Ser Leu Pro Phe Val Gly Glu Lys Val Thr Glu Met Leu Val Asn Val
      355                      360          365
Leu Asn Ile Cys Ser Asp Asp Glu Leu Gly Ser Glu Glu Asp Gly Phe
      370                      375          380
Asp Gly Ala Thr Ala Ala Ala Arg Lys Glu Val Ile Arg Asn Lys Ile
385                      390          395          400
Arg Ala Ile Gly Lys Met Ala Arg Val Phe Ser Val Leu Arg Glu Glu
      405                      410          415
Ser Glu Ser Val Leu Thr Leu Lys Gly Leu Thr Pro Thr Gly Met Leu
      420                      425          430
Pro Ser Gly Val Leu Ser Gly Gly Lys Gln Thr Leu Gln Ser Ala Thr
      435                      440          445
Val Glu Ala Ile Glu Ala Asp Glu Ala Ile Lys Gly Phe Ser Pro Gln
      450                      455          460
His Lys Ile Thr Ser Phe Glu Glu Ala Lys Gly Leu Asp Arg Ile Asn
465                      470          475          480
Glu Arg Met Pro Pro Arg Arg Asp Ala Met Pro Ser Asp Ala Asn Leu
      485                      490          495
Asn Ser Ile Asn Lys Ala Leu Thr Ser Glu Thr Asn Gly Thr Asp Ser
      500                      505          510
Asn Gly Ser Asn Ser Ser Asn Ile Gln
      515                      520

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<210> 35

<211> 1267

<212> PRT

<213> Homo sapiens

<400> 35

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Asp Leu Ser Arg Ser His Cys His Val Tyr Leu Ala His Leu Glu Asn
  1                      5          10          15
Ser Phe Gly Pro Ser Gly Ala Arg Glu Gly Ser Leu Ser Ser Gln Asp
      20                      25          30
Ser Arg Thr Glu Ser Ala Ser Leu Ser Gln Ser Gln Val Asn Gly Phe
      35                      40          45
Phe Ala Ser His Leu Gly Asp Gln Thr Trp Gln Glu Ser Gln His Gly
      50                      55          60
Ser Pro Ser Pro Ser Val Ile Ser Lys Ala Thr Glu Lys Glu Thr Phe
      65                      70          75          80
Thr Asp Ser Asn Gln Ser Lys Thr Lys Lys Pro Gly Ile Ser Asp Val
      85                      90          95
Thr Asp Tyr Ser Asp Arg Gly Asp Ser Asp Met Asp Glu Ala Thr Tyr
      100                     105          110

```

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|--|
| Ser | Ser | Ser | Gln | Asp | His | Gln | Thr | Pro | Lys | Gln | Glu | Ser | Ser | Ser | Ser | | | | |
| | | 115 | | | | | 120 | | | | | 125 | | | | | | | |
| Val | Asn | Thr | Ser | Asn | Lys | Met | Asn | Phe | Lys | Thr | Phe | Pro | Ser | Ser | Pro | | | | |
| | 130 | | | | | 135 | | | | | 140 | | | | | | | | |
| Pro | Arg | Ser | Gly | Asp | Ile | Phe | Glu | Val | Glu | Leu | Ala | Lys | Asn | Asp | Asn | | | | |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 | | | | |
| Ser | Leu | Gly | Ile | Ser | Val | Thr | Gly | Gly | Val | Asn | Thr | Ser | Val | Arg | His | | | | |
| | | | | 165 | | | | | 170 | | | | | 175 | | | | | |
| Gly | Gly | Ile | Tyr | Val | Lys | Ala | Val | Ile | Pro | Gln | Gly | Ala | Ala | Glu | Ser | | | | |
| | | 180 | | | | | 185 | | | | | 190 | | | | | | | |
| Asp | Gly | Arg | Ile | His | Lys | Gly | Asp | Arg | Val | Leu | Ala | Val | Asn | Gly | Val | | | | |
| 195 | | | | | | 200 | | | | | | 205 | | | | | | | |
| Ser | Leu | Glu | Gly | Ala | Thr | His | Lys | Gln | Ala | Val | Glu | Thr | Leu | Arg | Asn | | | | |
| 210 | | | | | | 215 | | | | | 220 | | | | | | | | |
| Thr | Gly | Gln | Val | Val | His | Leu | Leu | Leu | Glu | Lys | Gly | Gln | Ser | Pro | Thr | | | | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | | | | |
| Ser | Lys | Glu | His | Val | Pro | Val | Thr | Pro | Gln | Cys | Thr | Leu | Ser | Asp | Gln | | | | |
| | | | | 245 | | | | | 250 | | | | | 255 | | | | | |
| Asn | Ala | Gln | Gly | Gln | Gly | Pro | Glu | Lys | Val | Lys | Lys | Thr | Thr | Gln | Val | | | | |
| | | | 260 | | | | | 265 | | | | | 270 | | | | | | |
| Lys | Asp | Tyr | Ser | Phe | Val | Thr | Glu | Glu | Asn | Thr | Phe | Glu | Val | Lys | Leu | | | | |
| | 275 | | | | | | 280 | | | | | 285 | | | | | | | |
| Phe | Lys | Asn | Ser | Ser | Gly | Leu | Gly | Phe | Ser | Phe | Ser | Arg | Glu | Asp | Asn | | | | |
| 290 | | | | | | 295 | | | | | 300 | | | | | | | | |
| Leu | Ile | Pro | Glu | Gln | Ile | Asn | Ala | Ser | Ile | Val | Arg | Val | Lys | Lys | Leu | | | | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | | | | |
| Phe | Pro | Gly | Gln | Pro | Ala | Ala | Glu | Ser | Gly | Lys | Ile | Asp | Val | Gly | Asp | | | | |
| | | | | 325 | | | | | 330 | | | | | 335 | | | | | |
| Val | Ile | Leu | Lys | Val | Asn | Gly | Ala | Ser | Leu | Lys | Gly | Leu | Ser | Gln | Gln | | | | |
| | | | 340 | | | | | 345 | | | | | | 350 | | | | | |
| Glu | Val | Ile | Ser | Ala | Leu | Arg | Gly | Thr | Ala | Pro | Glu | Val | Phe | Leu | Leu | | | | |
| | | 355 | | | | | 360 | | | | | 365 | | | | | | | |
| Leu | Cys | Arg | Pro | Pro | Pro | Gly | Val | Leu | Pro | Glu | Ile | Asp | Thr | Ala | Leu | | | | |
| 370 | | | | | | 375 | | | | | 380 | | | | | | | | |
| Leu | Thr | Pro | Leu | Gln | Ser | Pro | Ala | Gln | Val | Leu | Pro | Asn | Ser | Ser | Lys | | | | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | | | | |
| Asp | Ser | Ser | Gln | Pro | Ser | Cys | Val | Glu | Gln | Ser | Thr | Ser | Ser | Asp | Glu | | | | |
| | | | | 405 | | | | | 410 | | | | | 415 | | | | | |
| Asn | Glu | Met | Ser | Asp | Lys | Ser | Lys | Lys | Gln | Cys | Lys | Ser | Pro | Ser | Arg | | | | |
| | | 420 | | | | | | 425 | | | | | 430 | | | | | | |
| Lys | Asp | Ser | Tyr | Ser | Asp | Ser | Ser | Gly | Ser | Gly | Glu | Asp | Asp | Leu | Val | | | | |
| | | 435 | | | | | 440 | | | | | 445 | | | | | | | |
| Thr | Ala | Pro | Ala | Asn | Ile | Ser | Asn | Ser | Thr | Trp | Ser | Ser | Ala | Leu | His | | | | |
| | 450 | | | | | 455 | | | | | 460 | | | | | | | | |
| Gln | Thr | Leu | Ser | Asn | Met | Val | Ser | Gln | Ala | Gln | Ser | His | His | Glu | Ala | | | | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 | | | | |
| Pro | Arg | Val | Lys | Lys | Ile | Pro | Phe | Val | Pro | Cys | Phe | Thr | Ile | Leu | Arg | | | | |
| | | | | 485 | | | | | 490 | | | | | 495 | | | | | |
| Lys | Arg | Pro | Asn | Lys | Pro | Glu | Phe | Glu | Asp | Ser | Asn | Pro | Ser | Pro | Leu | | | | |
| | | | 500 | | | | | 505 | | | | | 510 | | | | | | |
| Pro | Pro | Asp | Met | Ala | Pro | Gly | Gln | Ser | Tyr | Gln | Pro | Gln | Ser | Glu | Ser | | | | |
| | | 515 | | | | | 520 | | | | | 525 | | | | | | | |
| Ala | Ser | Ser | Ser | Ser | Met | Asp | Lys | Tyr | His | Ile | His | His | Ile | Ser | Glu | | | | |
| | 530 | | | | | 535 | | | | | 540 | | | | | | | | |
| Pro | Thr | Arg | Gln | Glu | Asn | Trp | Thr | Pro | Leu | Lys | Asn | Asp | Leu | Glu | Asn | | | | |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 | | | | |
| His | Leu | Glu | Asp | Phe | Glu | Leu | Glu | Val | Glu | Leu | Leu | Ile | Thr | Leu | Ile | | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | | | | | 565 | | | | | 570 | | | | | 575 | |
| Lys | Ser | Glu | Lys | Gly | Ser | Leu | Gly | Phe | Thr | Val | Thr | Lys | Gly | Asn | Gln | |
| | | | 580 | | | | | 585 | | | | | 590 | | | |
| Arg | Ile | Gly | Cys | Tyr | Val | His | Asp | Val | Ile | Gln | Asp | Pro | Ala | Lys | Ser | |
| | | 595 | | | | | 600 | | | | | 605 | | | | |
| Asp | Gly | Arg | Leu | Lys | Pro | Gly | Asp | Arg | Leu | Ile | Lys | Val | Asn | Asp | Thr | |
| | 610 | | | | | 615 | | | | | 620 | | | | | |
| Asp | Val | Thr | Asn | Met | Thr | His | Thr | Asp | Ala | Val | Asn | Leu | Leu | Arg | Gly | |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 | |
| Ser | Lys | Thr | Val | Arg | Leu | Val | Ile | Gly | Arg | Val | Leu | Glu | Leu | Pro | Arg | |
| | | | | 645 | | | | 650 | | | | | | 655 | | |
| Ile | Pro | Met | Leu | Pro | His | Leu | Leu | Pro | Asp | Ile | Thr | Leu | Thr | Cys | Asn | |
| | | 660 | | | | | | 665 | | | | 670 | | | | |
| Lys | Glu | Glu | Leu | Gly | Phe | Ser | Leu | Cys | Gly | Gly | His | Asp | Ser | Leu | Tyr | |
| | | 675 | | | | | 680 | | | | | 685 | | | | |
| Gln | Val | Val | Tyr | Ile | Ser | Asp | Ile | Asn | Pro | Arg | Ser | Val | Ala | Ala | Ile | |
| | 690 | | | | | 695 | | | | | 700 | | | | | |
| Glu | Gly | Asn | Leu | Gln | Leu | Asp | Val | Ile | His | Tyr | Val | Asn | Gly | Val | | |
| 705 | | | | 710 | | | | | 715 | | | | | | 720 | |
| Ser | Thr | Gln | Gly | Met | Thr | Leu | Glu | Glu | Val | Asn | Arg | Ala | Leu | Asp | Met | |
| | | | | 725 | | | | 730 | | | | | | 735 | | |
| Ser | Leu | Pro | Ser | Leu | Val | Leu | Lys | Ala | Thr | Arg | Asn | Asp | Leu | Pro | Val | |
| | | | 740 | | | | | 745 | | | | | 750 | | | |
| Val | Pro | Ser | Ser | Lys | Arg | Ser | Ala | Val | Ser | Ala | Pro | Lys | Ser | Thr | Lys | |
| | | 755 | | | | | 760 | | | | | 765 | | | | |
| Gly | Asn | Gly | Ser | Tyr | Ser | Val | Gly | Ser | Cys | Ser | Gln | Pro | Ala | Leu | Thr | |
| | 770 | | | | | 775 | | | | | 780 | | | | | |
| Pro | Asn | Asp | Ser | Phe | Ser | Thr | Val | Ala | Gly | Glu | Glu | Ile | Asn | Glu | Ile | |
| 785 | | | | 790 | | | | | | 795 | | | | | 800 | |
| Ser | Tyr | Pro | Lys | Gly | Lys | Cys | Ser | Thr | Tyr | Gln | Ile | Lys | Gly | Ser | Pro | |
| | | | | 805 | | | | | 810 | | | | | 815 | | |
| Asn | Leu | Thr | Leu | Pro | Lys | Glu | Ser | Tyr | Ile | Gln | Glu | Asp | Asp | Ile | Tyr | |
| | | | 820 | | | | | 825 | | | | | 830 | | | |
| Asp | Asp | Ser | Gln | Glu | Ala | Glu | Val | Ile | Gln | Ser | Leu | Leu | Asp | Val | Val | |
| | | 835 | | | | | 840 | | | | | 845 | | | | |
| Asp | Glu | Glu | Ser | Gln | Asn | Leu | Leu | Asn | Glu | Asn | Asn | Ala | Ala | Gly | Tyr | |
| | 850 | | | | | 855 | | | | 860 | | | | | | |
| Ser | Cys | Gly | Pro | Gly | Thr | Leu | Lys | Met | Asn | Gly | Lys | Leu | Ser | Glu | Glu | |
| 865 | | | | | 870 | | | | | 875 | | | | | 880 | |
| Arg | Thr | Glu | Asp | Thr | Asp | Cys | Asp | Gly | Ser | Pro | Leu | Pro | Glu | Tyr | Phe | |
| | | | | 885 | | | | | 890 | | | | | 895 | | |
| Thr | Glu | Ala | Thr | Lys | Met | Asn | Gly | Cys | Glu | Glu | Tyr | Cys | Glu | Glu | Lys | |
| | | | 900 | | | | | 90 | | | | | | | | |

Tyr Lys Asn Ile Leu Pro Tyr Asp Ala Thr Arg Val Pro Leu Gly Asp
 1025 1030 1035 1040
 Glu Gly Gly Tyr Ile Asn Ala Ser Phe Ile Lys Ile Pro Val Gly Lys
 1045 1050 1055
 Glu Glu Phe Val Tyr Ile Ala Cys Gln Gly Pro Leu Pro Thr Thr Val
 1060 1065 1070
 Gly Asp Phe Trp Gln Met Ile Trp Glu Gln Lys Ser Thr Val Ile Ala
 1075 1080 1085
 Met Met Thr Gln Glu Val Glu Gly Glu Lys Ile Lys Cys Gln Arg Tyr
 1090 1095 1100
 Trp Pro Asn Ile Leu Gly Lys Thr Thr Met Val Ser Asn Arg Leu Arg
 1105 1110 1115 1120
 Leu Ala Leu Val Arg Met Gln Gln Leu Lys Gly Phe Val Val Arg Ala
 1125 1130 1135
 Met Thr Leu Glu Asp Ile Gln Thr Arg Glu Val Arg His Ile Ser His
 1140 1145 1150
 Leu Asn Phe Thr Ala Trp Pro Asp His Asp Thr Pro Ser Gln Pro Asp
 1155 1160 1165
 Asp Leu Leu Thr Phe Ile Ser Tyr Met Arg His Ile His Arg Ser Gly
 1170 1175 1180
 Pro Ile Ile Thr His Cys Ser Ala Gly Ile Gly Arg Ser Gly Thr Leu
 1185 1190 1195 1200
 Ile Cys Ile Asp Val Val Leu Gly Leu Ile Ser Gln Asp Leu Asp Phe
 1205 1210 1215
 Asp Ile Ser Asp Leu Val Arg Cys Met Arg Leu Gln Arg His Gly Met
 1220 1225 1230
 Val Gln Thr Glu Asp Gln Tyr Ile Phe Cys Tyr Gln Val Ile Leu Tyr
 1235 1240 1245
 Val Leu Thr Arg Leu Gln Ala Glu Glu Glu Gln Lys Gln Gln Pro Gln
 1250 1255 1260
 Leu Leu Lys
 1265

<210> 36
 <211> 551
 <212> PRT
 <213> Homo sapiens

<400> 36
 Met Asn Glu Ser Pro Asp Pro Thr Asp Leu Ala Gly Val Ile Ile Glu
 1 5 10 15
 Leu Gly Pro Asn Asp Ser Pro Gln Thr Ser Glu Phe Lys Gly Ala Thr
 20 25 30
 Glu Glu Ala Pro Ala Lys Glu Ser Pro His Thr Ser Glu Phe Lys Gly
 35 40 45
 Ala Ala Arg Val Ser Pro Ile Ser Glu Ser Val Leu Ala Arg Leu Ser
 50 55 60
 Lys Phe Glu Val Glu Asp Ala Glu Asn Val Ala Ser Tyr Asp Ser Lys
 65 70 75 80
 Ile Lys Lys Ile Val His Ser Ile Val Ser Ser Phe Ala Phe Gly Leu
 85 90 95
 Phe Gly Val Phe Leu Val Leu Leu Asp Val Thr Leu Ile Leu Ala Asp
 100 105 110
 Leu Ile Phe Thr Asp Ser Lys Leu Tyr Ile Pro Leu Glu Tyr Arg Ser
 115 120 125
 Ile Ser Leu Ala Ile Ala Leu Phe Phe Leu Met Asp Val Leu Leu Arg
 130 135 140

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Phe | Val | Glu | Arg | Arg | Gln | Gln | Tyr | Phe | Ser | Asp | Leu | Phe | Asn | Ile |
| 145 | | | | | 150 | | | | 155 | | | | | 160 | |
| Leu | Asp | Thr | Ala | Ile | Ile | Val | Ile | Leu | Leu | Leu | Val | Asp | Val | Val | Tyr |
| | | | 165 | | | | | 170 | | | | | 175 | | |
| Ile | Phe | Phe | Asp | Ile | Lys | Leu | Leu | Arg | Asn | Ile | Pro | Arg | Trp | Thr | His |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Leu | Leu | Arg | Leu | Leu | Arg | Leu | Ile | Leu | Leu | Arg | Ile | Phe | His | Leu | |
| | | 195 | | | | 200 | | | | | 205 | | | | |
| Phe | His | Gln | Lys | Arg | Gln | Leu | Glu | Lys | Leu | Ile | Arg | Arg | Val | Ser | |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Glu | Asn | Lys | Arg | Arg | Tyr | Thr | Arg | Asp | Gly | Phe | Asp | Leu | Asp | Leu | Thr |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Tyr | Val | Thr | Glu | Arg | Ile | Ile | Ala | Met | Ser | Phe | Pro | Ser | Ser | Gly | Arg |
| | | | 245 | | | | | 250 | | | | | | 255 | |
| Gln | Ser | Phe | Tyr | Arg | Asn | Pro | Ile | Lys | Glu | Val | Val | Arg | Phe | Leu | Asp |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Lys | Lys | His | Arg | Asn | His | Tyr | Arg | Val | Tyr | Asn | Leu | Cys | Ser | Glu | Arg |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Ala | Tyr | Asp | Pro | Lys | His | Phe | His | Asn | Arg | Val | Val | Arg | Ile | Met | Ile |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Asp | Asp | His | Asn | Val | Pro | Thr | Leu | His | Gln | Met | Val | Val | Phe | Thr | Lys |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Glu | Val | Asn | Glu | Trp | Met | Ala | Gln | Asp | Leu | Glu | Asn | Ile | Val | Ala | Ile |
| | | | 325 | | | | | 330 | | | | | | 335 | |
| His | Cys | Lys | Gly | Thr | Asp | Arg | Thr | Gly | Thr | Met | Val | Cys | Ala | Phe | |
| | | | 340 | | | | 345 | | | | | 350 | | | |
| Leu | Ile | Ala | Ser | Glu | Ile | Cys | Ser | Thr | Ala | Lys | Glu | Ser | Leu | Tyr | Tyr |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Phe | Gly | Glu | Arg | Arg | Thr | Asp | Lys | Thr | His | Ser | Glu | Lys | Phe | Gln | Gly |
| | 370 | | | | 375 | | | | | | 380 | | | | |
| Val | Glu | Thr | Pro | Ser | Gln | Lys | Arg | Tyr | Val | Ala | Tyr | Phe | Ala | Gln | Val |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Lys | His | Leu | Tyr | Asn | Trp | Asn | Leu | Pro | Pro | Arg | Arg | Ile | Leu | Phe | Ile |
| | | | 405 | | | | | 410 | | | | | 415 | | |
| Lys | His | Phe | Ile | Ile | Tyr | Ser | Ile | Pro | Arg | Tyr | Val | Arg | Asp | Leu | Lys |
| | | 420 | | | | | | 425 | | | | | 430 | | |
| Ile | Gln | Ile | Glu | Met | Glu | Lys | Lys | Val | Val | Phe | Ser | Thr | Ile | Ser | Leu |
| | | 435 | | | | | 440 | | | | | 445 | | | |
| Gly | Lys | Cys | Ser | Val | Leu | Asp | Asn | Ile | Thr | Thr | Asp | Lys | Ile | Leu | Ile |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Asp | Val | Phe | Asp | Gly | Pro | Pro | Leu | Tyr | Asp | Asp | Val | Lys | Val | Gln | Phe |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Phe | Tyr | Ser | Asn | Leu | Pro | Thr | Tyr | Tyr | Asp | Asn | Cys | Ser | Phe | Tyr | Phe |
| | | | 485 | | | | | 490 | | | | | | 495 | |
| Trp | Leu | His | Thr | Ser | Phe | Ile | Glu | Asn | Asn | Arg | Leu | Tyr | Leu | Pro | Lys |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Asn | Glu | Leu | Asp | Asn | Leu | His | Lys | Gln | Lys | Ala | Arg | Arg | Ile | Tyr | Pro |
| | | 515 | | | | | 520 | | | | | 525 | | | |
| Ser | Asp | Phe | Ala | Val | Glu | Ile | Leu | Phe | Gly | Glu | Lys | Met | Thr | Ser | Ser |
| | 530 | | | | | 535 | | | | | 540 | | | | |
| Asp | Val | Val | Ala | Gly | Ser | Asp | | | | | | | | | |
| 545 | | | | | 550 | | | | | | | | | | |

<210> 37

<211> 323

<212> PRT

<213> Homo sapiens

<400> 37
 Met Ala Asp Leu Asp Lys Leu Asn Ile Asp Ser Ile Ile Gln Arg Leu
 1 5 10 15
 Leu Glu Val Arg Gly Ser Lys Pro Gly Lys Asn Val Gln Leu Gln Glu
 20 25 30
 Asn Glu Ile Arg Gly Leu Cys Leu Lys Ser Arg Glu Ile Phe Leu Ser
 35 40 45
 Gln Pro Ile Leu Leu Glu Leu Glu Ala Pro Leu Lys Ile Cys Gly Asp
 50 55 60
 Ile His Gly Gln Tyr Tyr Asp Leu Leu Arg Leu Phe Glu Tyr Gly Gly
 65 70 75 80
 Phe Pro Pro Glu Ser Asn Tyr Leu Phe Leu Gly Asp Tyr Val Asp Arg
 85 90 95
 Gly Lys Gln Ser Leu Glu Thr Ile Cys Leu Leu Leu Ala Tyr Lys Ile
 100 105 110
 Lys Tyr Pro Glu Asn Phe Phe Leu Leu Arg Gly Asn His Glu Cys Ala
 115 120 125
 Ser Ile Asn Arg Ile Tyr Gly Phe Tyr Asp Glu Cys Lys Arg Arg Tyr
 130 135 140
 Asn Ile Lys Leu Trp Lys Thr Phe Thr Asp Cys Phe Asn Cys Leu Pro
 145 150 155 160
 Ile Ala Ala Ile Val Asp Glu Lys Ile Phe Cys Cys His Gly Gly Leu
 165 170 175
 Ser Pro Asp Leu Gln Ser Met Glu Gln Ile Arg Arg Ile Met Arg Pro
 180 185 190
 Thr Asp Val Pro Asp Gln Gly Leu Leu Cys Asp Leu Leu Trp Ser Asp
 195 200 205
 Pro Asp Lys Asp Val Leu Gly Trp Gly Glu Asn Asp Arg Gly Val Ser
 210 215 220
 Phe Thr Phe Gly Ala Glu Val Val Ala Lys Phe Leu His Lys His Asp
 225 230 235 240
 Leu Asp Leu Ile Cys Arg Ala His Gln Val Val Glu Asp Gly Tyr Glu
 245 250 255
 Phe Phe Ala Lys Arg Gln Leu Val Thr Leu Phe Ser Ala Pro Asn Tyr
 260 265 270
 Cys Gly Glu Phe Asp Asn Ala Gly Ala Met Met Ser Val Asp Glu Thr
 275 280 285
 Leu Met Cys Ser Phe Gln Ile Leu Lys Pro Ala Glu Lys Lys Lys Pro
 290 295 300
 Asn Ala Thr Arg Pro Val Thr Pro Pro Arg Gly Met Ile Thr Lys Gln
 305 310 315 320
 Ala Lys Lys

<210> 38
 <211> 319
 <212> PRT
 <213> Homo sapiens

<400> 38
 Asp Lys Leu Asn Ile Asp Ser Ile Ile Gln Arg Leu Leu Glu Val Arg
 1 5 10 15
 Gly Ser Lys Pro Gly Lys Asn Val Gln Leu Gln Glu Asn Glu Ile Arg
 20 25 30
 Gly Leu Cys Leu Lys Ser Arg Glu Ile Phe Leu Ser Gln Pro Ile Leu
 35 40 45

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Leu Glu Leu Glu Ala Pro Leu Lys Ile Cys Gly Asp Ile His Gly Gln
  50                      55                      60
Tyr Tyr Asp Leu Leu Arg Leu Phe Glu Tyr Gly Gly Phe Pro Pro Glu
  65                      70                      75                      80
Ser Asn Tyr Leu Phe Leu Gly Asp Tyr Val Asp Arg Gly Lys Gln Ser
                      85                      90                      95
Leu Glu Thr Ile Cys Leu Leu Leu Ala Tyr Lys Ile Lys Tyr Pro Glu
          100                      105                      110
Asn Phe Phe Leu Leu Arg Gly Asn His Glu Cys Ala Ser Ile Asn Arg
          115                      120                      125
Ile Tyr Gly Phe Tyr Asp Glu Cys Lys Arg Arg Tyr Asn Ile Lys Leu
          130                      135                      140
Trp Lys Thr Phe Thr Asp Cys Phe Asn Cys Leu Pro Ile Ala Ala Ile
          145                      150                      155                      160
Val Asp Glu Lys Ile Phe Cys Cys His Gly Gly Leu Ser Pro Asp Leu
          165                      170                      175
Gln Ser Met Glu Gln Ile Arg Arg Ile Met Arg Pro Thr Asp Val Pro
          180                      185                      190
Asp Gln Gly Leu Leu Cys Asp Leu Leu Trp Ser Asp Pro Asp Lys Asp
          195                      200                      205
Val Leu Gly Trp Gly Glu Asn Asp Arg Gly Val Ser Phe Thr Phe Gly
          210                      215                      220
Ala Glu Val Val Ala Lys Phe Leu His Lys His Asp Leu Asp Leu Ile
          225                      230                      235                      240
Cys Arg Ala His Gln Val Val Glu Asp Gly Tyr Glu Phe Phe Ala Lys
          245                      250                      255
Arg Gln Leu Val Thr Leu Phe Ser Ala Pro Asn Tyr Cys Gly Glu Phe
          260                      265                      270
Asp Asn Ala Gly Ala Met Met Ser Val Asp Glu Thr Leu Met Cys Ser
          275                      280                      285
Phe Gln Ile Leu Lys Pro Ala Glu Lys Lys Lys Pro Asn Ala Thr Arg
          290                      295                      300
Pro Val Thr Pro Pro Arg Gly Met Ile Thr Lys Gln Ala Lys Lys
          305                      310                      315

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<210> 39

<211> 309

<212> PRT

<213> Homo sapiens

<400> 39

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Met Asp Glu Lys Val Phe Thr Lys Glu Leu Asp Gln Trp Ile Glu Gln
  1                      5                      10                      15
Leu Asn Glu Cys Lys Gln Leu Ser Glu Ser Gln Val Lys Ser Leu Cys
          20                      25                      30
Glu Lys Ala Lys Glu Ile Leu Thr Lys Glu Ser Asn Val Gln Glu Val
          35                      40                      45
Arg Cys Pro Val Thr Val Cys Gly Asp Val His Gly Gln Phe His Asp
          50                      55                      60
Leu Met Glu Leu Phe Arg Ile Gly Gly Lys Ser Pro Asp Thr Asn Tyr
          65                      70                      75                      80
Leu Phe Met Gly Asp Tyr Val Asp Arg Gly Tyr Tyr Ser Val Glu Thr
          85                      90                      95
Val Thr Leu Leu Val Ala Leu Lys Val Arg Tyr Arg Glu Arg Ile Thr
          100                      105                      110
Ile Leu Arg Gly Asn His Glu Ser Arg Gln Ile Thr Gln Val Tyr Gly
          115                      120                      125

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Phe Tyr Asp Glu Cys Leu Arg Lys Tyr Gly Asn Ala Asn Val Trp Lys
 130 135 140
 Tyr Phe Thr Asp Leu Phe Asp Tyr Leu Pro Leu Thr Ala Leu Val Asp
 145 150 155 160
 Gly Gln Ile Phe Cys Leu His Gly Gly Leu Ser Pro Ser Ile Asp Thr
 165 170 175
 Leu Asp His Ile Arg Ala Leu Asp Arg Leu Gln Glu Val Pro His Glu
 180 185 190
 Gly Pro Met Cys Asp Leu Leu Trp Ser Asp Pro Asp Asp Arg Gly Gly
 195 200 205
 Trp Gly Ile Ser Pro Arg Gly Ala Gly Tyr Thr Phe Gly Gln Asp Ile
 210 215 220
 Ser Glu Thr Phe Asn His Ala Asn Gly Leu Thr Leu Val Ser Arg Ala
 225 230 235 240
 His Gln Leu Val Met Glu Gly Tyr Asn Trp Cys His Asp Arg Asn Val
 245 250 255
 Val Thr Ile Phe Ser Ala Pro Asn Tyr Cys Tyr Arg Cys Gly Asn Gln
 260 265 270
 Ala Ala Ile Met Glu Leu Asp Asp Thr Leu Lys Tyr Ser Phe Leu Gln
 275 280 285
 Phe Asp Pro Ala Pro Arg Arg Gly Glu Pro His Val Thr Arg Arg Thr
 290 295 300
 Pro Asp Tyr Phe Leu
 305

<210> 40

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Artificially Synthesized Primer Sequence

<400> 40

tacggaagtg ttacttctgc

20

<210> 41

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Artificially Synthesized Primer Sequence

<400> 41

tgtgggaggt tttttctcta

20

<210> 42

<211> 17

<212> DNA

<213> Artificial Sequence

<220>

<223> Artificially Synthesized Primer Sequence

<400> 42

gttttcccag tcacgac

17

<210> 43
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Artificially Synthesized Primer Sequence

<400> 43
caggaaacag ctatgac